Brookhaven National Laboratory Cosmotron

2018-2020

An Assessment of Historic Properties and Preservation Activities at the U.S. Department of Energy

The Ammunition Igloo at the National Renewable Energy Laboratory

Test Cell C at the Nevada National Security Site

In response to requirements of Executive Order 13287, *Preserve America*

U.S. Department of Energy

September 2020

Table of Contents

Acronym List

ACHP	Advisory Council on Historic Preservation
AEC	Atomic Energy Commission
ANL	Argonne National Laboratory
BNL	Brookhaven National Laboratory
BPA	Bonneville Power Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRMP	Cultural Resource Management Plan
D&D	Decontamination & Decommissioning
EIS	Environmental Impact Statement
FIMS	Facilities Information Management System
GIS	Geographic Information System
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Report
HALS	Historic American Landscape Survey
INL	Idaho National Library
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LLNL	Lawrence Livermore National Laboratory
LM	Office of Legacy Management
MAPR	Manhattan National Historical Park
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

NETL	National Energy Technology Laboratory
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NPS	National Park Service
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
PA	Programmatic Agreement
NRE	National Register Eligible
NPS	National Park Service
NRHP	National Register of Historic Places
PNNL	Pacific Northwest National Laboratory
SHPO	State Historic Preservation Officer
SLAC	Stanford Linear Accelerator Laboratory
SRS	Savannah River Site
SSP	Site Sustainability Plans
SWPA	Southwestern Power Administration
THPO	Tribal Historic Preservation Officer
WAPA	Western Area Power Administration

Introduction

In March 2003, President George W. Bush signed Executive Order 13287, *Preserve America.*

The goal of the Executive Order is to enhance Federal stewardship in the areas of cultural resource management and historic preservation. The Executive Order directs Federal agencies to include cultural resource and historic preservation considerations in their day-to-day decision making and encourages Federal agencies to seek partnerships with communities, nonprofits, and other interested parties to incorporate "heritage tourism" into local economic development strategies.

This report updates the December 2004, November 2005, November 2008, October 2011, and September 2014 assessments provided to the President's Advisory Council on Historic Preservation (ACHP) and fulfills the requirements of Executive Order 13287 (Sections 3a and 3b) that agencies with real property management responsibilities describe the general conditions and management needs of their historic properties and review their regulations, management policies, and operating procedures for compliance with Sections 110 and 111 of the National Historic Preservation Act (NHPA).

Part I of this report begins with a brief overview of the Department's assets, followed by a summary of the progress made since the September 2014 report. **Part II** consists of reports separately compiled by cultural resources staff at DOE field sites.

This report was prepared by the Department of Energy's History Program, with the assistance of the cultural resources offices and contacts at the Department's field sites. Questions or comments should be directed to Eric Boyle, the Department's Historian and Federal Preservation Officer, at 202-586-5241.

Part I. Background and Overview

U.S. Department of Energy

The U.S. Department of Energy (DOE) was established on October 1, 1977, as the twelfth cabinet-level department. It brought together for the first time within one agency two programmatic traditions that had long coexisted within the Federal establishment:

- a loosely knit amalgamation of energy-related programs scattered throughout the Federal government dealing with various aspects of non-nuclear Federal energy policy, research and development, regulation, pricing, and conservation; and
- defense responsibilities that included the design, construction, and testing of nuclear weapons dating from the World War II Manhattan Project effort to build the atomic bomb that subsequently evolved into the Cold War nuclear weapons complex.

Departmental Assets

From a historical and historic preservation perspective, many, though not all, of the Department's most significant assets are associated with the Manhattan Project and how it helped end World War II, the building of the nuclear weapons that helped win the Cold War, and the pursuit of world-class science and technology, most notably through the national laboratories. The Manhattan Project's role in helping end World War II is regarded as one of the most important events of the 20th century, while the advent of nuclear weapons ushered in the nuclear age and determined how the next war—the Cold War—would be fought. DOE and its predecessors' seventy years of support for science—including the work of Nobel prizewinning scientists—in such diverse fields as physics, genomics, climate change, and nanotechnology, has helped revolutionize the modern scientific enterprise.

A small sample of the best known historical physical assets for which the Department has stewardship responsibilities includes the B Reactor at Hanford (Manhattan Project); V-Site and Gun Site at Los Alamos (Manhattan Project); the Graphite Reactor, Beta 3 Calutron Facility, and the K-25 Gaseous Diffusion Plant Process Building at Oak Ridge (Manhattan Project); Experimental Breeder Reactor-1 (EBR-1) at the Idaho National Laboratory (Atoms for Peace); the Nevada National Security Site, formerly known as the Nevada Test Site (Cold War), and the nuclear weapons rail cars at the Pantex Plant (Cold War).

Some of DOE's historical physical assets are open to the public on an intermittent or controlled basis, including, among others, the B Reactor at Hanford, EBR-I at the Idaho National Laboratory, the Graphite Reactor at the Oak Ridge National Laboratory, and the weapons effects areas at the Nevada National Security Site.

As the Federal Government's third largest steward of land, DOE is responsible for lands that contain prehistoric archeological sites. The Department's Los Alamos National Laboratory, for example, contains nearly 2000 known archaeological sites, many of them Ancestral Pueblo resources rivaling or even

exceeding those of adjacent Bandelier National Monument—a well-known park—in terms of quality or uniqueness. Other examples include the Savannah River Site and Idaho National Laboratory archeological sites and the Nevada Test Site and Bonneville Power Administration petroglyphs. Idaho National Laboratory (INL) has conducted analysis of artifacts and paleontological remains to reveal additional information regarding prehistoric occupation and climate change as reflected in the isotopic signatures preserved in the bones of large game recovered from excavation. INL has also developed a memorandum of understanding to conduct research on volcanic glass with the U.S. Forest Service and Bureau of Land Management. During FY2018-2019, the INL CRMO developed a robust in-house obsidian sourcing program to examine how changes in the geography, climate, and distribution of resources on the Snake River Plain affected patterns of mobility through lands now managed by the INL.

The Department is also responsible for historic assets that predate Federal ownership of a site. Oak Ridge, for example, maintains several church buildings and cemeteries left in place when the Manhattan Engineer District took over the site during World War II. Hanford has the remains of a high school, an agricultural warehouse, and a bank building. The Nevada Test Site has cabins, corrals, and mine sites, and remnants of homesteads, stage stations, and historic trails dot the Idaho National Laboratory landscape.

Among the Department's most significant textual assets are documents, photographs, and oral histories. Notable examples are the Atomic Energy Commission (AEC) Secretariat records, headquarters and field photograph collections, and special collections like the Nuclear Testing Archive co-located with the Atomic Testing Museum in Las Vegas, Nevada. DOE owns oral histories associated with some of the most renowned figures in recent American history, including Enrico Fermi, Edward Teller, and J. Robert Oppenheimer. In addition to oral histories that capture the words and deeds of well-known scientists, the Department's knowledge preservation efforts have documented important aspects of the decades-long, multi-billion-dollar investment in science, engineering, and process-knowledge through interviews with current and former employees.

The Department of Energy also has formal and informal relationships with museums located at or near DOE field sites. While a formal relationship exists with the American Museum of Science and Energy, Oak Ridge, Tennessee, informal relationships exist with the National Museum of Nuclear Science and History (formerly the National Atomic Museum), Albuquerque, New Mexico; Bradbury Science Museum, Los Alamos, New Mexico; the Hanford Reach Interpretive Center, Richland, Washington; and the National Atomic Testing Museum, Las Vegas, Nevada. Each museum is unique, due to particular local needs and varying funding and management mechanisms. Some sites also have exhibits at local museums. Idaho National Laboratory, for example, supports a major permanent exhibit in the Museum of Idaho in Idaho Falls.

Many DOE field sites also maintain visitor centers. Their primary focus is presenting the science and technology related to a particular DOE national laboratory or facility. Departmental visitor centers include the Science Learning Center at Brookhaven National Laboratory, the Lawrence Livermore National Laboratory Discovery Center, the Leon Lederman Science Education Center at Fermi National

Accelerator Laboratory (Fermilab), the National Renewable Energy Laboratory Visitors Center, and the SLAC National Accelerator Laboratory Visitor Center.

DOE visitor centers are also located at former weapons complex sites that were closed, went through remedial action and environmental restoration, and then opened to the public. At the Office of Legacy Management's Weldon Springs, Missouri, and Fernald, Ohio, sites, the visitor centers document the history of the site and facility, clean-up efforts, and ongoing maintenance and surveillance. The Fernald Preserve, Ohio, site is the location of a former uranium processing facility that was cleaned up under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Fernald Preserve Visitors Center is a 10,000-square-foot Leadership in Energy & Environmental Design (LEED) platinum-certified, green building that was converted from a former warehouse on the site. The Visitors Center celebrates the rich and varied history of the Fernald site. Information on the site's natural, Native American, settlement and farming, uranium production, and environmental cleanup eras, as well as the recent ecological restoration and legacy management mission, is presented through a series of exhibits. Admission to the Visitors Center is free, and meeting spaces at the facility are also available for no charge to local organizations. The Weldon Spring Site in Missouri is the location of a former uranium materials plant. The Weldon Spring Site Interpretive Center represents a window to the past and the Office of Legacy Management's commitment to the future through long-term surveillance and maintenance of the Weldon Spring Site and a strong community partnership. The Center houses exhibits that present a photographic history of the Weldon Spring area, the towns that once occupied this area, and the site's historical contributions. It also details progression of the site cleanup process and construction of the 45-acre disposal cell and communicates the legacy of the site to current and future generations. Educational and outreach programs, tours, research opportunities, and volunteer opportunities are provided by the Center.

The Department opened a headquarters visitor center in the lobby of the Forrestal Building at a ceremony marking DOE's 30th anniversary in October 2007. The headquarters visitor center includes a Manhattan Project exhibit and a timeline documenting DOE's history.

Finally, DOE offices and sites provide a wide variety of history pages, online tours, and virtual museums on their websites. The DOE Historian oversees the History pages on the Department's Energy.gov website at https://www.energy.gov/lm/doe-history. The site provides a listing of field history pages at https://www.energy.gov/lm/doe-history/historical-resources/labs-and-field-site-histories.

Due in large part to a history of compartmentalization and decentralization throughout DOE's history, substantial power and authority throughout the DOE complex has been allocated to field offices, which means DOE field sites have developed their own unique and individual cultural resources and historic preservation programs. Compliance activities associated with the National Historic Preservation Act and other relevant laws have been performed primarily by contractors under the direction of DOE field officials.

In the last three years, the Department's program to manage its history and heritage resources has made significant advances, both at headquarters and in the field, with a wide range of resources being applied to historic preservation. The upgrade and advancement of preservation efforts continues to bring greater visibility, enhanced recognition of the importance of the Department's historic assets, and genuine progress toward preservation and interpretation.

Identifying Historic Properties

In compliance with Section 106 of the NHPA and the PA, cultural resource staff assess proposed projects that range in size and complexity, from routine to specific activities. The number of these projects can vary dramatically depending on the site. During each of the reporting years at Los Alamos National Laboratory, more than 900 proposed undertakings were reviewed. During the current reporting period, LANL cultural resources staff also surveyed approximately 111 acres of previously unsurveyed lands for cultural resources, and evaluated 86 archaeological sites and 15 buildings and structures. These efforts are similar to the prior reporting period and bring the total survey coverage for LANL just above 90 percent. At Idaho National Laboratory, during the review period 2018-2020 a total of 320 Section 106 review projects were conducted; 101 for archaeological properties and 220 for historic architectural properties. Field surveys in support of these INL projects covered more than 6,000 acres, in addition to the nearly 56,000 acres surveyed prior to FY2017, which represents only approximately 10% of INL Site lands. Other sites have substantially fewer projects, architectural properties, and archaeological properties. At some sites, the Section 106 requirements of the NHPA are integrated with the National Environmental Policy Act (NEPA) review process. Sites rely on a continuous improvement process to evaluate policies and procedures for effectiveness and needed updates on a reoccurring cycle.

Historic properties are tracked with varying degrees of detail over several databases and online tools across the DOE complex. Due to the sensitivity of the data, in many cases this information is internal. Some DOE sites maintain a database of the site's eligible cultural resources and areas of completed archaeological surveys in a facility management Geographic Information System (GIS). The Nevada National Security Site (NNSS) Cultural Resources Management Plan, for example, relies on a GIS database that holds comprehensive records of archaeological and architectural inventory areas and known historic properties, historic districts, and unrecorded Cold War resources on the NNSS. The NNSS Cultural Resources Management Program uses this database to access, update, analyze, and manage historic properties. For built-environment resources, the Facility Information Management System is updated frequently as properties are recorded and evaluated for eligibility to the NRHP.

There are also publically accessible repositories of information on historic resources. For example, the Bonneville Power Administration (BPA) Library contains a wealth of information on the transmission system as well as the history of BPA's development and includes historic photos, videos, reports, correspondence, and newspaper articles. A sizable amount of material from BPA is also stored at the National Archives at Seattle.

The results of some important studies of historic properties from a variety of sites that have been approved for public release and publication are made available via the Department of Energy's Office of

Scientific and Technical (OSTI) website at https://www.osti.gov. Numerous reports have been uploaded over the last three years from the Nevada National Security Site, for example, including the *Architecture of Mercury: Nevada's Boom Town* and additional reports detailing resources in the Mercury Historic District, such as the Mercury Bowling Alley, and architectural surveys of other facilities.

In the preparation of the reports on historic properties, federal employees and contractors utilize on-site and off-site archives, some of which have been digitized and made available electronically. The types of documents housed in the DOE archives include: archaeological survey reports and project files dating, archaeological site files, historic building documentation, technical reports, journal articles, books, historic photographs and aerials, engineer drawings, and historic maps. Sites also retain photo archives dating to their beginnings, including initial construction and when additions were made.

In-house expertise in environmental science and cultural resources are on staff at some sites. At sites with cultural resources expertise in-house, staff has continued to give presentations and tours that focus on cultural resource compliance, awareness and identification of historic properties, and historic preservation activities.

More commonly, sites utilize contracts with outside firms to conduct evaluation of historic structures and to conduct archeological evaluations. At Oak Ridge, for example, Cultural Resources Analysts (CRA) was engaged to conduct an independent assessment of Oak Ridge National Laboratory's National Historic Preservation Act Compliance Program during 2016, and in subsequent years has partnered with ORNL in efforts to build on strengths and make recommended improvements identified in that initial assessment report. The updated *Historic Architectural Resource Survey* undertaken during 2017 and the survey report published and submitted to the TN SHPO in 2018 was the first major effort kicking off collaborative efforts between ORNL and CRA that are ongoing and crucial to meeting our present and future responsibilities under NHPA.

DOE sites also use other methods for complying with the NHPA. Hanford, in partnership with the Environmental Protection Agency, has developed new methods to conduct NHPA as an Applicable or Relevant and Appropriate Requirements (ARARs) to the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) section 121 requirements. The National Historic Preservation Act is identified as an ARAR, therefore CERCLA remedies must comply with the NHPA. The new process allows for information about historic properties and NHPA processes to be considered in making decisions about remedial actions under CERCLA. Documentation of how the agency met the substantive requirements of NHPA as an ARAR either though a finding of No Historic Properties Affected, No Adverse Effects or the development of an MOA to resolve Adverse Effects to Historic Properties, is then incorporated in the development of a final Record of Decision.

DOE also maintains this ongoing partnerships to capitalize on local knowledge and subject matter expertise on identification of historic properties for various infrastructure projects.

Protecting Historic Properties

Cultural resources management staff across the DOE complex have continued to implement projects to comply with cultural resource laws, regulations, executive orders, and directives; develop tools to better manage cultural resources, including updating current guidance manuals; and assess the effects of projects on historic properties.

DOE sites take a variety of steps to manage historic assets, including: preparing Historic Resource Study (HRS) reports; preparing and implementing annual Site Sustainability Plans (SSP); conducting Phase I, Phase II and Phase III archaeological surveys; utilizing Geographic Information System (GIS) for construction and excavation projects; documenting properties through Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), or Historic American Landscape Survey (HALS) reports; conducting appropriate cultural resource inventory work or other technical studies of unevaluated buildings and structures of sufficient age to merit evaluation; and maintaining accurate historical status of real property assets in the Facilities Information Management System (FIMS), using Federal Real Property Profile (FRPP) definitions.

Sites frequently work with SHPOs, American Indian tribes, Native Hawaiian organizations, certified local governments, and other organizations to protect and manage historic properties. Sites are encouraged to examine their policies, procedures, and capabilities for public-private initiatives and investment and report on their progress.

Over the past three years DOE overall has substantially grown its NHPA compliance programs, calling upon expertise and contributions from a wide variety of individuals and organizations, and many sites have added to their core team of cultural resources management staff.

DOE sites also provide informational tools and resources to educate interested stakeholders on the significant history and future of these sites. Some of the resources available include social media and active websites, open houses and community conversations, articles and fact sheets, educational demonstrations, and displays. Additionally, cultural resource staff collaborate with local and regional schools to introduce students to STEM-based career opportunities and to educate them about the history and ecosystems of a number of sites.

Site procedures for satisfying the NHPA and DOE requirements amidst ongoing facility operations in many cases are outlined in a Programmatic Agreement (PA) or Memorandum of Agreement (MOA) between DOE-and the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation. DOE consults with the SHPO and the ACHP if proposed actions may adversely affect properties considered eligible for listing or listed on the NRHP. Some sites also maintain a Cultural Resource Management Plan (CRMP) which contains information on the procedures for considering cultural resources during site or laboratory operations. In accordance with the PA and CRMP, DOE consults with the SHPO on relevant projects.

In some cases, Section 110 Surveys are managed in-house, at the same time as carrying out Section 106 obligations. Cultural resources staff have employed strategies for adaptive reuse for facilities across the DOE complex, in accordance with Section 110 of the NHPA. Cultural resources staff have developed

other uses for historically significant, uncontaminated properties as an alternative to demolition including use as office space, storage, and interpretative areas. One example of this type of effort is underway for the Quonset Hut at Los Alamos National Laboratory, the building where the high explosives components of the Fat Man atomic device were assembled. Restoration of the Quonset Hut to its original interior configuration would allow the building to serve as conference and office space for current employees, and it could serve as an important site for Manhattan Project National Historical Park visitors.

Regarding collaborations, DOE has partnered with public and private preservation organizations, local city and county historic societies, and museums to assist in the protection of historic built resources.

Regarding Section 111, the vast majority of sties have no plans to sell, lease, exchange or transfer any of their historic properties.

Using Historic Properties

The Manhattan Project National Park (MAPR) sites, in Hanford, Washington, Oak Ridge, Tennessee, and Los Alamos, New Mexico, continue to make substantial contributions to local economies and communities. MAPR supports a school outreach program, under which several thousand elementary, middle, and high school students have visited the Park over the last three years. Cultural resources staff have continued to be active participants in community dialogues regarding the Park, and they continue to work closely with local historic preservation representatives. During the current reporting period, cultural resources staff have facilitated the development of historical exhibits and have provided presentations at public meetings, community lectures and events, university venues, professional conferences, and at Energy Community Alliance meetings. Additionally, DOE sponsors a vibrant annual public tour program that enables people of all ages to visit the park's historic resources.

Beyond the Manhattan Project National Historical Park, DOE supports heritage tourism and community involvement through a wide range of outreach efforts. The public is often introduced to historic properties with guided public tours of Cold War historic locations. Some sites also offer special group and media tours. American Indian Tribes also visit sites regularly to view prehistoric and ethnohistoric sites and assist with current condition assessments.

Elsewhere, DOE has undertaken efforts to promote tourism in the last three years through historic photography, presentations, films, and exhibits to the DOE workforce as well as the surrounding communities. Interpretive signage at sites and their surrounding areas include historic photos, maps, and text, which explore different aspects of history, technology and significance to the development of the region. This includes virtual tours of historic properties that can be accessed by the public. It should be noted that some DOE sites are located on private campuses and are not open to the public, which precludes the use of historic properties by the public.

Oak Ridge National Laboratory is one example of a site that has for many decades been a leading force in fostering heritage tourism, showcasing DOE's science missions and accomplishments. The premier example of this would be maintaining and making publicly accessible the Graphite Reactor facility, a

National Historic Landmark and a part of the newly established MAPR. Another example would be ORNL's stewardship of the American Museum of Science and Energy located in Oak Ridge, Tennessee, and participation in associated site tour programs. Unfortunately, it has been necessary to suspend all nonessential visits to ORNL since early 2020 in response to the COVID-19 pandemic.

DOE actively seeks out potential reuse opportunities associated with its diverse mix of sites and assets. In the Office of Legacy Management, for example, on June 6, 2019, LM hosted a ribbon-cutting ceremony for its Atomic Legacy Cabin, an interpretive center located in a historic building leased by LM at its Grand Junction, Colorado, office. The cabin once was the epicenter of the nationwide search for uranium that was started by the Manhattan Project and later escalated during the Cold War.

Across the DOE complex, when applicable, eligible historic properties are also maintained and repurposed to satisfy DOE's science mission. When a facility is not determined to be a candidate for reuse or rehabilitation, due to environment, safety or health limitations, the facility decommissioning process is considered to dispose of real property in accordance with applicable DOE Orders.

At Oak Ridge, the requirements of the Integrated Facilities Disposition Program (IFDP) directly impact current preservation strategies. The IFDP's mission is to "*protect workers, the public, and the environment, and enable…ongoing Departmental goals and our National mission-based research, defense, and energy programs."* Implementation of the IFDP will reduce risk to workers, the public, and the environment from potential exposure to radioactive and hazardous material; eliminate increasing annual surveillance and maintenance cost for obsolete, inactive facilities; and enable completion of the Environmental Management mission in Oak Ridge. The initial IFDP project in 2009 was classified as a "Program," however, in 2016 as it was recognized that such a large magnitude of scope and schedule could be most successfully addressed as smaller discreet projects. On October 18, 2016, the Chief Executive for Project Management signed the Memorandum "*Approval to Implement a Revised Management and Execution Approach for the Oak Ridge Office of Environmental Management Integrated Facility Disposition Program."*

Overall, DOE sites have a significant economic impact on communities across the country. To cite just one example, NNSS employs more than 3,000 workers across six government agencies, 11 prime contractors, and three laboratories. Approximately $1.3 million per year supports the lease and utilities at the National Atomic Testing Museum and more than $5 million is provided annually to DRI, which supports environmental monitoring, American Indian relations, revegetation studies, and the archeological monitoring of historic properties.

Regarding other less obvious contributions to local communities, federal properties of power administrations contribute to local communities and their economies by supplying required power, building new substations and transmission lines or expanding capacity at existing sites in order to meet local and regional power supply changes.

Select Highlighted Successes and Opportunities

- In 2018, the DOE Richland Operations Office National Park Program was honored with a Special Achievement Award from the Washington State Department Archaeology and Historic Preservation for the rehabilitation of the historic White Bluffs Bank. Constructed in 1907 and now part of the Manhattan Project National Historical Park, the bank had fallen into extreme disrepair and was in danger of collapse. Following the rehabilitation project, DOE opened the bank to visitors for the first time during the 2018 public tour season. It was the first time the bank was accessible to the public since the land was taken for the top-secret Manhattan Project in 1943.
- Bonneville Power Administration's biggest successes achieved over the last three year are the completion of a large scale agency wide effort to evaluate and manage historic assets. The Intensive Level Survey of all BPA historic built resources evaluated hundreds of assets that now all have an NRHP determination status. Another large effort that was completed this year is the BPA Manual for Built Resources. The Manual for Built Resources serves as a comprehensive inventory report covering the Intensive Level Survey efforts, evaluates the Agency's significant historic resources and provides a guide for how to maintain them.
- Recent efforts in negotiating the MOA between the DOE-Brookhaven Site Office and the New York State Historical Preservation Office has highlighted the potential for increased historic exposure for the Brookhaven National Lab and the local community. Discovery Park is planned as a Public-Private partnership and the placement of kiosks at various locations in the development including the Science User Support Center will allow the general public to gain easy access to some of the history of the site.
- In FY2017, A systematic internal review and revamp of Idaho National Laboratory Cultural Resources Management Office data management processes was initiated, resulting in a complete digitization and organization of all legacy project files maintained by the INL CRMO. Additional outcomes have included streamlined data storage, increased access, more stringent and streamlined data collection protocols. The newly hired archivist and records management specialists helped initiate, with the input of the INL CRMO staff, the development and implementation of metadata standards for records they create moving forward.
- Completion of mitigation in the form of a Historic American Building Survey (HABS) and/or a Historic American Engineering Record (HAER) documentation for all eligible properties has been identified as a major success for Lawrence Livermore National Laboratory's management of cultural resources. These have included Building (B) 858, the Advanced Test Accelerator; B391, the Nova Facility; B332, The Plutonium Facility; B850 and B851A; the Hydrodynamic Test Facilities District; and the Process and Chemistry Area Historic District; as well as for the proposed decommissioning of B280, and for equipment and building upgrades and remodels in the Livermore Pool-Type Reactor.
- The Los Alamos National Laboratory's Candidates for Preservation Program has been very successful in coordinating with laboratory maintenance staff to maintain 47 facilities for long-term preservation. This process has ensured that cultural resources staff visit each facility on a quarterly basis to identify any maintenance needs and to coordinate maintenance and repair activities.
- At the Nevada National Security Site, the townsite of Mercury had never been systematically recorded and the opportunity presented itself to evaluate this historic base camp. A total of

900 acres was surveyed for architectural resources. These efforts resulted in the identification, recordation, and evaluation of the Mercury Historic District, including the identification of its contributing components. The National Nuclear Security Administration Nevada Field Office determined the district was eligible to the NRHP for its national significance and importance in supporting nuclear testing and scientific research from 1951 to 1992 during the Cold War era. The district was found to contain 154 buildings, structures, and landscapes. Of these resources, all except one were determined to be contributing elements to the district during its period of significance.

- In Oak Ridge, Y-12, in consultation, received concurrence to re-use one of its historic MAPR properties, Building 9731. Building 9731 is being considered to accommodate a "State-of-the-Art" training facility and an Interpretative Center. Building 9731, known as the Pilot Plant, was the first production building completed at the Y-12 site, and the first building to house the special equipment used for the electromagnetic separation process that enriched uranium used in the first atomic bomb that helped bring an end to World War II.
- In Oak Ridge, construction of the K-25 History Center was completed and the museum was opened to the public in February 2020. The significance of the K-25 Building, the gaseous diffusion process it housed for enriching uranium during World War II and the Cold War, and the people who designed, built, and operated this facility is told through numerous exhibits, audiovisual productions, and over 300 artifacts from the K-25 Site on display. This K-25 History Center will aid to bring tourist to the Oak Ridge area. ETTP is also part of the AMSE summer bus tours.
- In many instances, the Office of Legacy Management has long-term stewardship responsibilities at properties it does not own. Therefore, partnering with other entities to nominate LM sites to the National Register of Historic Properties presents a unique opportunity to LM. For instance, as part of ongoing collaboration, in 2020 LM provided a draft National Register nomination package for its Gasbuggy, New Mexico, Site to the U.S. Forest Service. The site is located in the Carson National Forest, which is under the jurisdiction of the U.S. Forest Service. Project Gasbuggy was the first natural gas reservoir stimulation experiment in the Plowshare Program, which was designed to develop peaceful uses for nuclear energy.
- Efforts to continue to educate DOE staff on historic properties have been expanded during this reporting period. As one example, Pacific Northwest National Laboratory continues to work with projects and researchers to help understand the definition of historic properties (such as including historic buildings) and to help educate them about the cultural resources process. In addition to trainings, internal and public websites have been established to bring further awareness to historic properties and the PNNL cultural resources program.
- During the past three years, the cultural resources staff at the Pantex Plant has successfully cataloged their historical archive collection. The documents in the historical archive collection contain manuals, correspondence, drawings, reports, maps, and photographs. Staff digitized over 300 photographs and negatives and 80 were included in the history display at the John C. Drummond Center. The artifacts are stored using archive safe materials in a facility meeting the requirements of 36 CFR 79.9. In addition, cultural resources staff have entered over 3,000 objects

into the Cultural Resource Management database. The display uses photographs to interpret the history of Pantex form 1942-Present in an area accessible to all Pantex staff and visitors.

- At the Portsmouth Gaseous Diffusion Plant site, DOE is working towards a determination on the location of the site's archaeological collection from the prehistoric and historic-era, and the curation of the site's collection at the selected facility. A copy of the prehistoric and historic-era reports can be obtained at the DOE Environmental Information Center by contacting 740-289-8898 or at portseic@ports.pppo.com. Additionally, an electronic copy can be found at https://www.energy.gov/pppo/downloads/national-historic-preservation-act-documents-portsmouth.
- Sandia National Laboratory has hired one full-time archaeologist to support compliance activities. The archaeologist reviews proposed activities through the NEPA process, as well as through notifications conducted via an internal ticketing process for ecological reviews. The archaeologist uses information from previously conducted surveys, and conducts new surveys to identify possible archaeological concerns. Similar to the SNL historian, the SNL archaeologist supports Section 106 and 110 compliance activities by providing assessments and recommendations regarding archaeological resources.
- The Savannah River Site Cold War History Preservation Program in partnership with the Savannah River Site Heritage Foundation, the Savannah River Archaeological Research Program, and the Aiken County Historical Museum wrote and won a Legacy grant from DOE to create a permanent exhibit in the newly established SRS Museum in Aiken SC in 2018-2019. Such an exhibit would fulfill a stipulation under the PA which was still under consultation but all parties wished to move ahead. The grant came with one stipulation that the central thrust of the exhibit should deal with the theme of environmental justice in the establishment of the Site. This led to the creation of *The 6,000 Stories* exhibit, which explores the sacrifice made by 6,000 former residents of the SRS and the necessity of that sacrifice.

Highlighted Challenges

- While site-level Programmatic Agreements have been a success in that they provide a formal mechanism for Section 106 consultation for projects, PAs have been challenging because there are responses for dozens of stakeholders to track and many have not been responsive to Section 106 submittals.
- Negative impacts can result from lack of historical integrity of buildings due to the constant and rapid turn-over of building uses and building sites due to limited building space.
- Loss of equipment and records in the distant past can make thorough historical assessments difficult.
- One obstacle to using Section 111 at some sites is the legacy of environmental contamination from historic nuclear testing and nuclear weapons or energy development. Remediating and managing these contaminated areas is a timely and costly process, and often includes historic properties.
- DOE historic properties are recognized for their value as physical representations of many places in national and world history in addition to their present day use in supporting ongoing and future DOE

missions. However, and as might be expected, the continued operation of aging and in many cases contaminated facilities presents unavoidable challenges in complying with environmental regulations such as the Clean Air Act, Clean Water Act, as well as complying with permitting processes.

- The lack of streamlined reviews through a program alternative such as a programmatic agreement for some sites, presents a challenge as it requires more individual consultations, which have the potential to delay project timelines and potentially threaten funding. Entering into agreements with the relevant SHPOs and ACHP in future years will allow for more simplified management of cultural resources.

Part II: Field Site Reports

Note: reports in this section have been compiled separately by cultural resources staff at the respective sites. As a result, the content, format and use of images will vary.

Argonne National Laboratory

Introduction

Argonne National Laboratory (Argonne) is a multidisciplinary science and engineering research campus, where talented scientists and engineers work together to answer the biggest questions facing humanity, from clean and sustainable energy to protecting people and the environment. The diverse and dynamic research agenda spans 14 research divisions, 12 centers, and five national user facilities. This rich scientific environment provides researchers with an extraordinary range of cutting-edge facilities and scientific tools that support in-depth research, drive technological breakthroughs, and improve the nation's competitiveness. Argonne is managed for the U.S. Department of Energy Office of Science by UChicago Argonne, LLC.

View of original Argonne Laboratory site at Palos Forest preserve.

The laboratory traces its birth from Enrico Fermi's secret charge — the Manhattan Project — to create the world's first atomic bomb. Known as the "Metallurgical Lab," Fermi's University of Chicago team constructed Chicago Pile-1, which achieved the first controlled, self-sustaining nuclear chain reaction on December 2, 1942, on a squash court located underneath the west stands of the University of Chicago's Stagg Field. Because the nuclear reactor experiments were deemed too dangerous to conduct in a major city, the operations were moved to a spot outside of Chicago and renamed "Argonne" Laboratory after the surrounding forest area. The site was further moved to its larger, current location in the late 1940s to early 1950s.

Passage of the Atomic Energy Act on July 1, 1946, officially chartered Argonne National Laboratory, its mission to conduct "cooperative research in nucleonics." Argonne was the first national nuclear research and development laboratory in the United States. At the request of the U.S. Atomic Energy Commission, Argonne became the nation's primary nuclear reactor center building on the reactor research conducted by its staff during World War II. The focus switched to developing nuclear reactors for the nation's peaceful nuclear energy program. Argonne established a sister facility in a remote location in Idaho named "Argonne-West," where experiments with full scale test reactors could be undertaken safely away from major population centers. This western site became part of Idaho National Laboratory in 2005.

During its years as the AEC's reactor laboratory Argonne had many notable achievements. The second female Nobel Prize winner in Physics after Marie Curie was Maria Goeppert-Mayer who won for her shell theory of atomic structure. Maria started with Argonne during World War II and remained an employee throughout her career. She was awarded the Nobel Prize in 1963. Argonne was also instrumental in the creation of the nuclear power industry. Some of the first commercial nuclear power reactors were and continue to be based on designs pioneered at Argonne. Many of the first commercial power reactor operators were trained on the reactors at Argonne.

Argonne evaluated its Cold War era structures (i.e. built prior to 1989) for potential listing on the National Register of Historic Places in 2001. The survey identified the Building 200 MA-Wing Caves, as well as Buildings 203, 205, 212, 315/316, and 350, as individually eligible for listing on the National Register of Historic Places (NRHP). The Main Campus Historic District (Buildings 200, 202, 203, 205, 208, 211) and the Freund Estate Historic District (Buildings 600, 604 and properties 603 [pool], 606 [pavilion], and 616 [tennis courts]) were determined National Register eligible as part of that evaluation. The main campus district is considered eligible for its association with advancements in nuclear research and development of nuclear power reactors and is considered a unique, specialized cohesive scientific facility. Separate evaluations conducted as part of facility decommissioning efforts established the Chicago Pile-5 Reactor (Building 330), the Argonne Thermal Source Reactor (Building 316), and specialized scientific facilities including the Physics and Metallurgy Hot Laboratory (Building 301), the High Voltage Electron Microscopy Facility, the Alpha-Gamma Hot Cell Facility (AGHCF), and Zero Power Reactors VI and IX as eligible for listing on the NRHP.

Surveys identified 61 archaeological sites at Argonne, three of which were determined eligible for listing on the NRHP, while 40 were determined ineligible. The remaining 17 archaeological sites are yet to be evaluated for NRHP eligibility. Archaeological sites at Argonne contain evidence from the region's local inhabitants ranging in time from approximately 9,000 years ago up to the 1940s.

Operation of Argonne National Laboratory passed from the AEC to the Department of Energy in 1977 and funding for much of the nuclear program at Argonne ceased in the early 1990s. Since that time, Argonne's research focus shifted away from development of nuclear energy sources, leveraging its experience in physics and chemical science into a strong battery research program to improve energy efficiency, medical research and development of high-performance computing. Today, the Argonne campus consists of 687 hectares (1,500 acres) in Downers Grove Township, DuPage County, Illinois located approximately 43 km (27 mi) southwest of downtown Chicago. The site is surrounded by the 907-hectare (2,240-acre) Waterfall Glen Forest Preserve of DuPage County.

Identifying Historic Properties

Argonne maintains a database of the site's eligible cultural resources and areas of completed archaeological surveys in its facility management Geographic Information System (GIS). This data is available for viewing through ANL's intranet GIS mapping website and is referenced when creating project NEPA review documentation. Site and county-wide aerial imagery from the 1950s to present is available through the GIS website. Argonne has a geospatial data sharing agreement in place with the local government entity (DuPage County, Illinois), but does not distribute cultural resource information of a sensitive nature outside of Argonne.

Roughly 248 hectares (613.37 acres), 41 percent, of the Argonne site has been examined through Phase I Archaeological surveys for the presence of cultural resources. This is an increase over the past report of 240 hectares surveyed by 2017. The additional archaeological surveys for this reporting period were completed under the Electrical Capacity and Distribution Capability (ECDC) Project to fulfill National Historic Preservation Act Section 106 requirements.

At Argonne, the Section 106 requirements of the NHPA are integrated with the National Environmental Policy Act (NEPA) review process, as well as the Argonne digging permit process. Argonne relies on a continuous improvement process to evaluate its policies and procedures for effectiveness and needed updates on a reoccurring cycle. No new policies were created for cultural resources during this reporting period.

In-house expertise in environmental science and cultural resources are on staff at Argonne in the programmatic research divisions. Argonne maintains this ongoing partnership between operations and research divisions to collaborate as needed and provide local knowledge and subject matter expertise on identification of historic properties for various infrastructure projects.

Protecting Historic Properties

Argonne's procedures for satisfying the NHPA and DOE requirements amidst ongoing facility operations are outlined in a Programmatic Agreement between the DOE-Argonne Site Office (ASO), the Illinois State Historic Preservation Officer and the Advisory Council on Historic Preservation. The DOE will consult with the SHPO and the ACHP if proposed actions may adversely affect properties considered eligible for listing or listed on the NRHP. Argonne maintains a Cultural Resource Management Plan which contains information on the procedures for considering cultural resources during laboratory operations. In accordance with the PA and CRMP, DOE consults with the SHPO on relevant projects.

The PA has not been updated or required update since its original creation in 2001.

Using Historic Properties

Eligible historic properties are maintained and repurposed to satisfy DOE's science mission. When a facility is not determined to be a candidate for reuse or rehabilitation, due to environment, safety or health limitations, the facility decommissioning process is considered to dispose of real property in accordance with applicable DOE Orders. Argonne is a private campus and not open to the public, which precludes the use of historic properties by the public.

Successes, Opportunities and Challenges

Supporting the Office of Science mission and addressing DOE's goal of reducing deferred maintenance while acting as good stewards of historic properties requires a delicate balancing act for Argonne operations management. As funding is available, DOE and Argonne will continue to make eligibility determinations on its remaining structures and undetermined archaeological sites.

Bonneville Power Administration

Introduction

The BPA, part of the Department of Energy, is a nonprofit federal power administration that markets wholesale hydroelectric energy throughout the Pacific Northwest. BPA's transmission system, which provides nearly one-third of the region's electric power, operates primarily in Idaho, Oregon, western Montana, and Washington, as well as sections of California, Nevada, Utah, and Wyoming, and interconnects with systems in British Columbia, Canada.

The BPA was created in 1937 by an Act of Congress as part of President Franklin Roosevelt's "New Deal" to market power from Bonneville Dam, the Columbia River's first federal dam. In 1938, BPA's first administrator James Dalmage Ross (1872-1939) proposed a "Master Grid" transmission network to connect Bonneville Dam and the newer Grand Coulee Dam with the Portland, Oregon and Puget Sound, Washington areas. The Master Grid plan linked Pasco, Yakima, Spokane, and Ellensburg, Washington via a 230-kilovolt (kV) circuit loop. The network also linked to Washington and Oregon coastal areas and extended south through Oregon's Willamette Valley to the California border through radiating 115-kV lines designed to deliver smaller loads. In May 1938, Congress's first appropriation of $3.5 million enabled BPA to begin Master Grid network construction.

View of Chehalis Substation Untanking Tower 1949.

During the Master Grid Period (1938-1945), BPA built 3,000 circuit miles of transmission lines and interconnected with existing public, private, and municipal distribution systems. The system supplied inexpensive Columbia River power to rural communities and attracted major industries to the region. The Master Grid functioned through a network of high-voltage lines as well as numerous substations and related facilities. During World War II, the Master Grid network advanced the region's significant wartime industries by supplying power to support shipyard production and to aluminum manufacturing sites for aircraft construction. BPA also powered the Hanford site, where the U.S. produced plutonium used in the atomic bombs dropped on Japan in 1945. After the war and the defense industry's decline, BPA power facilitated development of regional agriculture and industry,

including timber. During the Master Grid Period, BPA built about 55 substations; however, some are no longer owned by BPA.

During the System Expansion Period (1946-1974), BPA connected new power generation facilities on the Columbia River and its tributaries to help accommodate the region's post-war growth. The Columbia River Treaty (1966) between the U.S. and Canada and development of the Pacific Northwest-Pacific Southwest Intertie enabled BPA to further expand its network and begin marketing excess power to southern California. The System Expansion Period ends with the dedication of the Dittmer Control Center's computer-based management systems for power transmission and implementation of Public Law 93-454 that transformed BPA's funding and operation.

BPA's two principal historic property types are transmission lines and substations. Microwave radio stations are a secondary historic property type that provide communications functions critical to BPA's grid operations. BPA strategically located substations to direct and control electrical power flow, alternate voltages, and serve as delivery points (Curran 1998:52-53). Substations placed near generating sources such as dams substantially increased transmission voltage. BPA also installed substations that interconnected with other power distribution systems or "where lower-voltage federal 'finger lines' disconnected from the main grid." Midway Substation, halfway between Bonneville and Grand Coulee, regulated voltage along the 234-mile line (Curran 1998:59).

Typical substation buildings are control houses, which contain vital operating equipment; untanking towers, where oil transformers and circuit breakers are cleaned and serviced; oil houses, to hold pumping equipment; condenser buildings, to hold synchronous condensers; storage/shop, materials storage, vehicle maintenance and system repair buildings; and administrative buildings, for regional and/or district headquarters and offices (Kramer 2012). If the substation had only one building, it was a control house. Substations also held transformers, circuit breakers, and capacitors in the switchyard. In a switchyard, buses (aluminum tubes) carry high voltage currents between the yard equipment. Giant steel towers supporting conductor cables serve as the end of line for transmission lines entering the substation.

BPA's microwave/radio system, established in the 1950s, consisted of "radio station" antenna towers and station buildings erected at high-ground sites, such as ridges and mountain peaks; associated equipment installed at end locations, such as control centers and substations; and devices carried in mobile field units. The radio stations provided instantaneous communication between end locations and with field crews involved in construction or maintenance activities. The newly activated microwave circuits enhanced data transmission functions for power line fault location, supervisory (remote) control of substations, telemetering, and others. The system also integrated communication and controls between BPA and other members of the Northwest Power Pool, an organization of the region's major electrical utilities.

During the Master Grid Period, BPA prepared basic substation designs comprised of standard units with "the design of a specific substation merely requiring the combining of the units involved into one coordinated whole" (BPA 1939:56). The first "unit," the control house, included "an office for public contact and separate rooms for station service and communication equipment, batteries and controls" (BPA 1939:56). BPA selected construction materials based on durability, safety and expense and incorporated landscaping as an integral part of substation design to "achieve natural, dignified, and pleasing structures" (BPA 1939:57).

Contrasting with the Master Grid Period, the built resources of the System Expansion Period reflected a

greater variety of architectural designs. Reflective of the architectural movements of the time, the Streamline Moderne designs of the Master Grid Period became less prominent as the Minimal Traditional and early Modern styles were introduced in the 1940s and 1950s. During the last decade of the System Expansion Period, from 1965 to 1974, BPA applied a series of modern architectural concepts to substation design. Developed by the architecture firm of Stanton, Boles, Maguire and Church, the concepts embodied the period's modern architectural trends for commercial and industrial buildings. These trends promoted simplification and streamlining, shedding "pretense toward ornamentation in favor of creative use of materials, with exposed aggregate panels, aluminum windows, and simple, boxy forms" (Kramer 2012).

BPA also issued guidelines for incorporation of their "beautility" program principles. These "Appearance Program Practices" included: 1) site selection to satisfy both engineering and aesthetic considerations; 2) transitions zones to "blend the station into the landscape;" 3) streamlined yard structures with lower profiles; 4) a color system to "unify substation composition," 5) incorporation of general and accent lighting; 6) "line approaches" to improve the appearance of elements visible to the public; and 7) use of architect-designed buildings (BPA 1966). BPA hired regional architecture firms for new building designs, including Stanton Boles, Maguire and Church, Ralph Appleman, Barnard and Holloway, and H. Zinder. BPA architects, including Dean Wright, George Poole, M. Hartford, C. Tetherow, and Charles Lovett modified and applied these designs to other control house buildings, and also created their own designs for new standard building types.

Identifying Historic Properties

BPA completed an Intensive Level Survey (ILS) of historic substations built between 1938 and 1974 in Oregon, Washington, Idaho, Montana, and Wyoming in 2018. Each substation contains a variety of buildings and structures (assets) and is evaluated for National Register of Historic Places (NRHP) eligibility as a historic district within the larger BPA transmission system. Individual historic period assets are evaluated as either contributing or non-contributing to each district. Some assets are also individually eligible for the NRHP. The historic property evaluations follow the (BPA) Pacific Northwest Transmission System Multiple Property Documentation Form (MPDF) as a framework for evaluation (Kramer 2012).

As a result of the ILS, BPA has completed eligibility determinations for all 135 substations in its current ownership built prior to 1975. Within BPA's substation portfolio, 77 substations are eligible for the NRHP as historic districts, and 58 are not eligible. One district, the Covington Substation is listed in the NRHP. Within the eligible substation historic districts, 36 assets are historically significant for their architectural design. Three individually eligible control houses – Alcoa, Potholes, and Troutdale – are architecturally significant but stand alone as individually eligible resources in districts that are not eligible.

The ILS incorporated research from BPA's repositories of scanned historic architectural drawings, photographs, and aerial images, as well as published and unpublished works documenting BPA's history, including books, videos, and maps. BPA's annual reports were reviewed for every year during the period of significance to glean information about development trends within BPA's transmission system, as well as updates for specific substations. Online newspaper articles supplemented the research with information relevant to the development and growth of each substation and its associated industries and communities. Contextual information was added to the ILS reports about significant trends related to specific substations, such as BPA's role in the Pacific Northwest aluminum industry and Beautility design trends BPA employed during the late 1960s and early 1970s. BPA cultural resources staff has

gathered and continue to collect agency reports and documents that aid in the historical research process, such as paint schematics, design manuals, maps, and legislation documents.

The ILS closely analyzed BPA's applied standardized design programs used during the Master Grid and System Expansion periods. Almost all of BPA's historic control houses followed standardized architectural designs identified with a number, such as Type 110, Type 144, Type 190, or the Type 2000 series. These designs, particularly for smaller utilitarian control houses, sometimes included plans for expansions or modifications. The ILS analyzed original architectural drawings and artists renditions of BPA's type designs help identify the character defining features of these buildings and assess integrity in a comparative context. Resources that display exceptional integrity were found to be individually eligible under Criterion C as representative examples of their respective design types and BPA's implementation of its architectural programs. In 2019 BPA undertook a project to evaluate all of BPA's historic microwave/radio station sites. BPA's current microwave communication network consists of 117 microwave radio stations. Of these, 53 were built between 1950 and 1974 and 28 are eligible for inclusion in the in the National Register of Historic Places (NRHP).

All BPA assets are tracked with varying degrees of detail over several databases and online tools. Due to the sensitivity of the data and potential threat to the power grid from outside sources, the vast majority of this information is internal. The location of substations, microwave radio stations, and individual transmission structures have been mapped in ArcGIS and are available to internal staff through a web based application (eGIS). Digital copies of maps, architectural/engineering plans and drawings, and site specific design information are cataloged and accessible through an engineering project content management software (ProjectWise). The physical copies of documents found on ProjectWise are stored in BPA Central Records. Other groups within BPA have independent databases with information that is crucial for describing, evaluating, and assessing historic resources, including: Real Property Services, Geospatial Services, Transmission System Standards, and Transmission Engineering.

There are also publically accessible repositories of information on BPA historic resources. The BPA Library contains a wealth of information on the transmission system as well as the history of BPA's development and includes historic photos, videos, reports, correspondence, and newspaper articles. A sizable amount of material from BPA is also stored at the National Archives at Seattle. Historic sites databases maintained by SHPO offices within the BPA service area also include information on all historic transmission projects that were encountered on any past project that went through the Section 106, however since these also include sensitive archaeological information the level of accessibility varies between states.

Geospatial information about historic properties is important for all transmission infrastructure for assessing the geographic context, but it has a particular importance for transmission line features. Transmission towers and other line structures were selected and manufactured to meet specific geographic and climactic need (river crossings, wind, ice/snow loads) so identifying their geographic context is important to understanding their design. Additionally, the transmission lines are evaluated as linear resources, with individual structures assessed as contributing elements to the overall line. In some cases the lines are very long, stretching for hundreds of miles and crossing many intra/inter-state

boundaries. Geospatial records help to keep the entire line in focus and crucial to determining the affects to the integrity of the overall line (especially for realignments of segments of the line, or material changes to transmission structures).

Regarding new policies, or new benchmarks or performance measures instituted to meet existing requirements:

- In 2018 and 2019, BPA has completed 100% of historic property identification and evaluation of its building and facility assets, which includes over 1,000 assets. BPA strives for Section 110 compliance through the finalization of the Intensive Level Survey (ILS) with 4 states SHPOs concurrence on determinations complete. Completing the Section 110 ILS allows Section 106 projects to move through the process much quicker as we have already identified and evaluated and move right to assessing the effects. Section 106 consultation for specific undertakings is still needed for transmission line projects. BPA is working toward the evaluation and management of its over 750 historic transmission lines. There are multiple substation and radio station building projects that result in adverse effects on historic built resources and require MOA consultation.
- BPA finalized the BPA Manual for Built Resources (MBR) in May, 2020. This document provides an overview of BPA's inventory of historic substations (i.e., those built before 1975), summarizes BPA's significant historic properties, and provides a guide for how to effectively manage and maintain historic properties under BPA's jurisdiction. The Microwave Radio Stations MBR addendum to this report summarizes BPA's inventory of historic microwave radio station sites with recommendations for this property type. BPA intends for the MBR to correspond with a Programmatic Agreement to be developed and signed by BPA and the Oregon, Washington, Idaho, and Montana State Historic Preservation Offices that documents historic review procedures for frequently occurring activities at BPA's historic properties. BPA intends to use the MBR to identify historically significant substations and contributing historic resources and inform the process for modifying contributing resources. The purpose of the MBR is to:
    - Facilitate project planning for major and minor substation projects;
    - Streamline project regulatory review and compliance;
    - Save time, money, and resources through efficiency gains; and
    - Preserve BPA's historic properties
- The MBR is designed to assist BPA in developing site-specific approaches for BPA facilities projects to comply with Section 106 of the National Historic Preservation Act. It identifies character-defining features of the various substation property types and provides specific guidance on proposed maintenance, repair, and modification projects and measures to avoid, minimize, and/or resolve potential adverse effects. It provides general treatment guidelines to reduce uncertainties among common existing, planned, and potential future facility improvement projects that may affect historic properties. BPA provided the MBR to the Oregon, Washington, Idaho, and Montana, State Historic Preservation Offices for review as part of the effort. Training with district maintenance staff will follow for how to use the MBR. The MBR is also a component of BPA's preservation program to protect BPA-owned National Register

eligible and listed historic properties and demonstrates BPA's efforts to comply with Section 110 of the NHPA. Consistent with Section 110, the MBR creates a tool for BPA to use in meeting the Secretary of the Interior's (SOI) Standards and Guidelines for Federal Agency Historic Preservation Programs (63 FR 79 (April 24, 1998)) by:

- Giving historic properties full consideration when planning or considering approval of any action that might affect such properties;
- Consulting with knowledgeable and concerned parties outside the agency about its historic preservation-related activities;
- Managing and maintaining historic properties under its jurisdiction or control in a manner that considers the preservation of their historic, architectural, archaeological, and cultural values; and
- Giving priority to the use of historic properties to carry out agency missions.

Regarding collaborations, BPA partnered with multiple departments within the agency for the identification and evaluation efforts (Facilities, Projects and Planning, Library and Archives, Safety Office, Field staff) and with a consulting team from AECOM's Portland Office.

Protecting Historic Properties

BPA now employs a Cultural Resource staff of nearly 20 employees. The group consists of archaeologists serving in three divisions: Transmission, Fish and Wildlife Mitigation Program, and the Federal Columbia River Protection System. The department also employs a GIS professional to serve all three divisions, and for the first time, the agency also employs a full time federal historian and full time contract historian to serve BPA undertakings that affect built resources owned and managed by the agency, and all other built resources that may be affected by an agency project are given full consideration. The hiring of two historians has enabled Section 110 Surveys to be managed in-house, at the same time as carrying out Section 106 obligations. The historians are able to supply guidance for all upcoming building projects and planning in the agency.

There is also the management of over a dozen MOAs that have various stipulations that need to be met. Some of the mitigation projects that have been created and managed for adverse effects to built resources include:

- BPA's first National Register listing, the Covington Substation was listed in 2019.
- Grant to Washington Trust for Historic Preservation for tool box grants to rehabilitate historic buildings throughout the state of Washington.
- Albums with archival quality historic photographs and captions donated to local historical societies, museums, and universities.
- Funding and materials for creating an exhibit about rural electrification and the development of power in Idaho's panhandle.
- Historic American Building Survey and Historic American Engineering Record documentation with large format photography.
- BPA registration and attendance at historic preservation focused trainings or conferences.
- Financial support and materials to state programs, historical societies, and museums to support planning processes and technical program development.
- Design, development and production of a museum exhibit on the High Voltage Direct Current Test Center Complex
- Oral history of BPA field staff in the south region.

- Create and install outdoor interpretive signage.
- Publish historical feature essays about BPA through Oregon Encyclopedia, History Link, and similar online repositories
- Salvage of historic BPA artifacts and reuse of historic artifacts and equipment from demolished assets.
- National Register Nomination for The Granary in Bonner County, ID to help facilitate the move of the Bonner County Historical Society and Museum into the granary building.

Regarding collaborations, BPA has partnered with Restore Oregon, Washington State History Museum, Washington Trust for Historic Preservation and local city and county historic societies and museums to assist in the protection of historic built resources.

BPA singed two Programmatic Agreements with the Idaho State Historic Preservation Office in 2015, one for Fish and Wildlife projects and one for Transmission projects. BPA is currently in the process of creating two new Programmatic Agreements for BPA historic infrastructure, one for transmission line assets, and the other for BPA facilities assets.

Using Historic Properties

Regarding contributions to local communities, BPA federal properties contribute to local communities and their economies by supplying required power, building new substations and transmission lines or expanding capacity at existing sites in order to meet local and regional power supply changes. Local economic development does not typically affect BPA asset planning. BPA sites and facilities are secured access, with no public access to the general public or the local community to the agency's historic properties.

BPA undertook efforts to promote tourism in the last 3 years through a portable museum exhibit "High Voltage – BPA and the High Voltage Direct Current Test Center" that traveled the region for two years (2019 and 2020) with stops at museums and visitors centers. The HVDC Test Center, the first facility of its kind in the United States, was established to use emerging industry knowledge on conversion between alternating current and direct current. Tests conducted at the HVDC Test Center gave BPA the information it needed to design a system to transmit power from what would become BPA's Celilo Converter Station, near The Dalles to the Sylmar Converter Station at Los Angeles Water and Power in California. This system, the Pacific Northwest-Pacific Southwest Intertie, used an 846-mile long direct current line that was heralded as the longest of its kind in the world. The exhibit was three years in the making, historical plans, equipment and photos were salvaged and used to create segments of the exhibit.

BPA has installed 3 interpretive panels with historic photos, maps, and text at outdoor sites that talk about different aspects of BPA history, technology and significance to the development of the region.

BPA historians work closely with BPA Facilities, Planning and Projects Department. This group is in charge of the agency's built assets. They have produced Strategic Framework Guides for Maintenance Headquarter Sites in order to have 5, 10 and 20 year plans for site development. The criteria that are considered in site decisions about historic properties are: continuity of critical functions, resiliency that facilities remain fully functional, security, efficiency, safety, environmental stewardship, historic

resources stewardship, governance and fiscal responsibility. The Facilities Conditions Index, security, standards, regulations and site needs will also influence the decision making for historic properties. BPA uses the Secretary of Interior Standards and Guidelines to adapt and reuse eligible historic resources whenever possible using the guidance of the BPA Manual for Built Resources document as guidance.

BPA's 1996 Policy for Sale or Lease of Delivery Facilities gives BPA customers the right, upon request, to purchase or lease substations or transmission lines that are used to deliver power to the requesting customer or customers. BPA sells historic assets to customers and the process goes through Section 106. The state of Oregon has state protections for historic properties that are sold or transferred out of federal ownership, however none of the other states in the BPA territory offer protection, so these undertakings typically result in an adverse effect and MOA.

Successes, Opportunities and Challenges

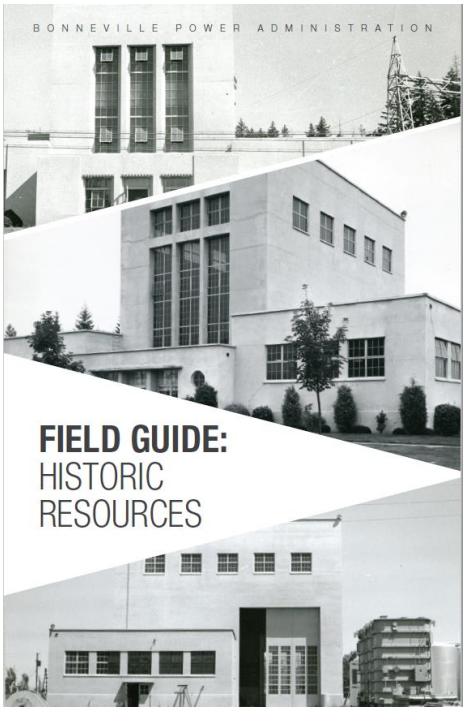
BPA's biggest successes achieved over the last three year are the completion of a large scale agency wide effort to evaluate and manage historic assets. The Intensive Level Survey of all BPA historic built resources evaluated hundreds of assets that now all have an NRHP determination status. Another large effort that was completed this year is the BPA Manual for Built Resources. The Manual for Built Resources serves as a comprehensive inventory report covering the Intensive Level Survey efforts, evaluates the Agency's significant historic resources and provides a guide for how to maintain them. The MBR assists BPA engineers, architects, and project and program managers in planning and developing site-specific approaches to agency projects to optimize compliance with Section 106. This document is one stop shopping for Built Section 106 Compliance for the agency. The third big effort that will be finished in September 2020 is the BPA Field Guide. The Historic Substation and Radio Station Field Guide is a culmination of the ILS and Manual efforts in an internal and external celebration of BPA's historic resources. It provides a quick guide of the key info for all of BPA's historic substations, and highlights the best of the best from each era, theme, and style. The field guide is organized by location, district and region and will provide easy access to staff out in the field for quick info on every historic asset.

BPA is taking a leadership role in historic properties stewardship with these efforts. The State Historic Preservation Offices that BPA collaborates with have commended these efforts. Without agency support, none of these efforts would have been possible. But the efforts have proven to reduce cost and improve efficiency.

BPA saves $4.25 million with historic designation project

June 1, 2018 Like 28 G+ Tweet

Built beginning in 1940, Covington is a rare example of a nearly complete Master Grid-era substation. Its principal buildings are Streamline Moderne, a straight-line design with little ornamentation, perfect for a utilitarian assemblage. Within the area of significance of politics and government, the Covington Substation is a representative of the BPA and the New Deal policies of President Franklin Delano Roosevelt.



First National Register Listing

BONNEVILLE
POWER ADMINISTRATION'S
COVINGTON SUBSTATION
HISTORIC DISTRICT

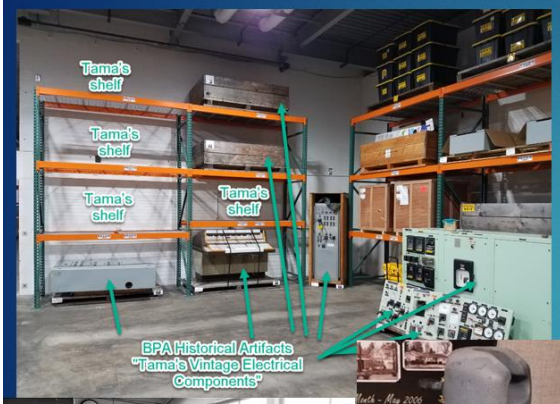
HAS BEEN LISTED IN THE

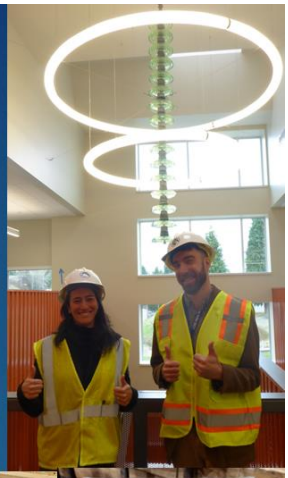
NATIONAL REGISTER
OF HISTORIC PLACES

BY THE UNITED STATES
DEPARTMENT OF THE INTERIOR

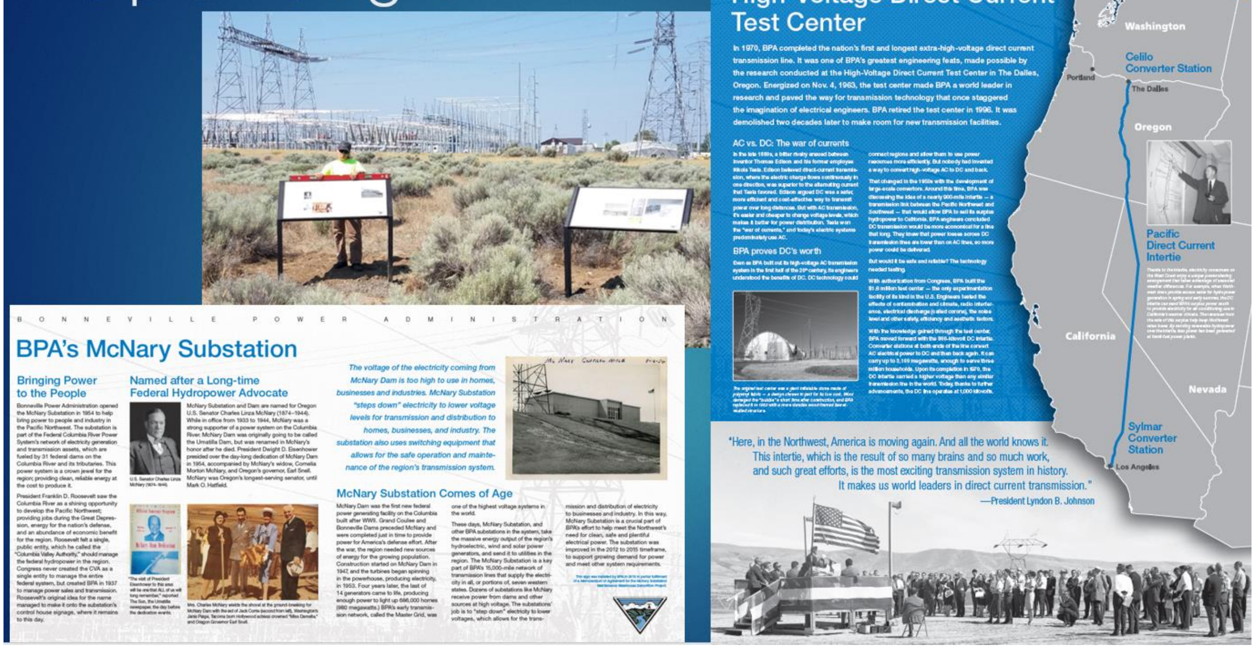
BUILT 1942 LISTED 2018

REUSE OF BPA HISTORIC ARTIFACTS





Interpretive Signs



Brookhaven National Laboratory

Introduction

Brookhaven National Laboratory (BNL) sits on the site of the former World War I and World War II Camp Upton (Fig. 1). In WWI, the War Department established Camp Upton as one of 16 cantonments for training the American Expeditionary Force to be deployed to Europe. Camp Upton was home to the 77th "Liberty" Division of "The Lost Battalion" fame. The BNL site still contains numerous WWI training trenches that have been determined eligible for listing on the National Register. Between the wars Camp Upton became the Upton National Forest and the Civilian Conservation Corps planted thousands of trees, established firebreaks, and water catchments to recover the land used for military training. In World War II, Camp Upton was re-established as an Induction Center and toward the end of the war it was converted into a Recovery and Recreation Center for returning troops. In 1946, scientists that worked on the Manhattan Project began petitioning for a National Laboratory for the peaceful research on the atom. On March 21, 1947 Camp Upton was official transferred from the U.S. War Department to the Atomic Energy Commission and Brookhaven National Laboratory was established. Over the years BNL has become a multi-dimensional research laboratory with research in high energy physics, medicine, chemistry, biology, imaging, and energy.

Figure 1: Brookhaven National Laboratory as received from War Department, 1947

Key facilities of historic importance include the Brookhaven Graphite Research Reactor and High Flux Beam Reactor, both of which have been determined to be eligible for listing on the National Register and have been designated as National Nuclear Landmarks. One other reactor, the Brookhaven Medical Research Reactor, was involved in research looking into the use of radiation for medical purposes. Other facilities included the Cosmotron (Fig. 2, no longer in existence), the first accelerator to achieve one billion electron volts, the Alternating Gradient Synchrotron, the National Synchrotron Light Source I & II, the Relativistic Heavy Ion Collider, the National Space Radiation Laboratory, and the Center for Functional Nanomaterials. The Chemistry building has been designated as a National Chemical Landmark by the Chemical Society for the diverse work that has been conducted there. This diverse set of facilities has been part of many significant discoveries including those related to 7 Nobel Prizes.

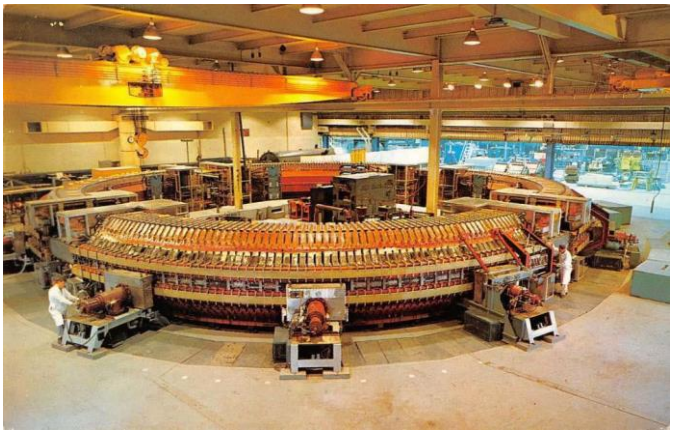


Figure 2: Cosmotron, the second major facility constructed at BNL.

Section 106 work is completed as projects affecting buildings or sites over 50 years old are being planned. Initial effort is to determine whether structures and sites are National Register Eligible and then determine if projects will have a negative impact. Many of the WWII era buildings have been evaluated and determined not to be eligible for listing. However, many structures from roughly 1960 to 1970 had not been evaluated until recently (see information below). Determinations and Section 106 documentation is usually done through contracts with qualified firms. Prior to 2017 the Lab determined that several structures and features were National Register Eligible. As mentioned above both the Brookhaven Graphite Research Reactor complex, the first reactor constructed for peaceful research of the atom; the High Flux Beam Reactor complex, designed to maximize neutron flux for research; are National Register Eligible (NRE). The WWI training trenches scattered across the site are NRE as are four 1960s era efficiency apartments built in 1964.

The Laboratory continues to work toward campus development to maintain its standing as a world class science research facility. Since 2017 no new construction has been built, but older structures have been removed. Major facilities at BNL include the Relativistic Heavy Ion Collider (RHIC), the Alternating Gradient Synchrotron (AGS) and Booster, Linear Accelerator, Brookhaven Linear Accelerator Isotope Producer (BLIP), Tandem Van DeGraff, National Synchrotron Light Source II, Center for Functional Nanomaterials, Integrated Science Building, and support structures and facilities. Major research departments include physics, chemistry, biology, environmental sciences, nuclear non-proliferation, and material sciences.

Planning continues for the construction of a new entrance facility called the Science Users Support Center (SUSC) located at the front gate with the eventual addition of a housing facility and science education center as part of the Upton Square. The Lab is also planning for the development of Discovery Park to house third party facilities that would have close affinities to Laboratory operations. The development of Discovery Park will occur in the area of the current apartment complex.

In January 2020, the Department of Energy made a decision to site an Electron Ion Collider (EIC) at Brookhaven National Laboratory. This $1.5-2.5 billion facility would be designed and constructed over the next ten years and will utilize high energy electrons to probe the structure and make-up of nuclei looking into protons and neutrons. The research at the EIC will undoubtedly result in new discoveries benefiting humankind and society.

Identifying Historic Properties

BNL continues to utilize contracts with outside firms to conduct evaluation of structures and features older than 50 years of age or to conduct archeological evaluations. Since 2017 additional reviews have been conducted as described below.

Figure 3: Example of one of four 1960s era efficiency apartment buildings.

In 2018, the New York State Historic Preservation Office (NYSHPO) concurred with the finding that the Discovery Park development would have a negative impact on the 1960s era apartments (Fig. 3) and that a recordation of the structures was required. The recordation was prepared and submitted to SHPO. The NYSHPO accepted the recordation and requested the Department of Energy – Brookhaven Site Office (DOE-BHSO) to enter into a Memorandum of Agreement for mitigative actions since the apartments were to be demolished. Over the span of 2019 and early 2020 various options were presented with DOE-BHSO and NYSHPO agreeing to develop a series of kiosks covering the history of the Apartment Area as well as a kiosk specifically highlighting the importance of the 1960s era apartments.

Also, in 2018, the Laboratory planned to pave over, or totally remove and replace a cement road dating to the rough period of WWI. There being only a few cement roads dating from the WWI era a Section 106 submittal was required and a contract to research and evaluate the roads was prepared. The evaluation looked through extensive documentation about the construction of Camp Upton in WWI, newspapers from 1917 through 1919, engineering reports, etc. While the roads were considered to be built around WWI, a direct linkage with WWI (1917 – 1918) Camp Upton could not be made and therefore the roads were determined Not Eligible for Listing. The report was submitted to NYSHPO and received concurrence.

In 2019, with more and more work being needed on buildings built during the early period of the Lab's history a contract was established to evaluate these building, plus two structures prior to the establishment of BNL (Brookhaven Center and Bldg. 120 a WWII barracks building). The reports prepared must still be submitted to the NYSHPO for review. However, the completion of the reports brings the evaluation of buildings to approximately 80% and virtually all remaining structures are less than 50 years old.

Figure 4: Berkner Hall, designed by Max O. Urbhan architects.

Figure 5: Chemistry building design by Marcel Breuer and incorporating unique features including central chase ways and open concepts.

In the preparation of the above reports the contractor utilized the extensive set of plans available within the BNL archives. Most of the plans were digitized and available electronically. BNL also retains a photo archive dating to the very beginning of the Laboratory in which many of the buildings were documented during construction and or when additions were made. These archives along with departmental records, stories in the Brookhaven Bulletin, and interviews were used to make determinations. While preliminary, and requiring SHPO concurrence, several buildings were determined to be National Register Eligible, including; Medical complex and Brookhaven Medical Research Reactor, Berkner Hall (Fig. 4), Chemistry (Fig. 5), Physics, Computational Sciences, Instrumentation, Cosmotron Building (portions from 1946-1964), much of the Alternating Gradient Synchrotron complex, buildings 820 and 830 (portions from 1957 and 1958), and two WWII structures, the original water tower (visible in Figure 1) and building 120, a nearly intact barracks building.

Of interest was the determination that the only standing building dating to the Civilian Conservation Corps (CCC) was not eligible due to significant modifications since construction in 1934. The building was variously modified by the CCC, the War Department for Officers Club (multiple additions), badging office by early BNL and subsequent upgrades.

During the reporting period, BNL has not implemented any new policies to promote awareness. BNL utilizes a Standards Based Management System to achieve compliance with regulations. With determination of additional buildings now eligible for listing, the NEPA and Cultural Resources subject area will require updating to include all buildings, structures, and features that are eligible. Through the NEPA process 'projects' are reviewed and any potentially impacting NRE buildings are flagged.

Since 2017 projects related to Discovery Park, the WWI era cement roads, and a planned replacement of the WWI water tower have required Section 106 review. The Discovery Park work has resulted in a MOA between DOE-BHSO and the NYSHPO; the WWI era cement roads were determined not to be eligible; and the WWII determination and effects document have yet to be reviewed. The remaining determinations have been done under Section 110 surveys so that their historic standing could be determined.

BNL does not currently have any partnerships with other federal or non-federal partners for the evaluation of historic properties. While the Laboratory maintains a geodatabase, it is not generally available to the public.

Protecting Historic Properties

During the reporting period, there has been no change in procedures for the protection of historic properties. Cultural resources are managed by one individual. The amount of time required to manage cultural resources has increased and efforts are being made to allocate more time toward cultural resource management.

Due to staffing limitations, the number of contracts for cultural resource assistance has increased over the past three years resulting in better understanding of historic resources eligible for listing.

Regarding partnerships, with the most recent MOA between DOE-BHSO and the NYSHPO, the NYSHPO will collaborate with BNL on the design, content, and potential placement of kiosks covering the history of the area being developed for Discovery Park.

As mentioned above, the Lab is working with NYSHPO to develop kiosks for interpretation of historic elements associated with the development of Discovery Park. This will be the first time for alternative approaches to the existing program. The alternative being developed is too early in the process to assess effectiveness.

Using Historic Properties

In 2019, BNL began working with the Long Island Museum, located in Stony Brook, NY, to develop a historical presentation of Brookhaven National Laboratory. The exhibit was to cover the entire history of BNL starting with the fact that BNL sits on the site of the former World War I and World War II Camp Upton. The exhibit was to run from April 2020 through fall 2020 but was delayed due to closures related to COVID-19.

The exhibit is currently scheduled for April 2021 and will run through fall 2021. The exhibit will utilize documents, photos, and historic artifacts held by BNL. Artifacts include scientific instruments, architectural models of scientific machines, pieces of original machines, etc. Loan agreements have been drawn up and will be executed for the exhibit. The exhibit is expected to draw a diverse range of the public and will be part of school programs offered by the museum.

Very often the decision for retaining or disposing of historic properties depends on economics, the ability to meet other regulatory requirements, and or incorporating older facilities for use in modern scientific endeavors.

Section 111 has not been utilized.

Successes, Opportunities and Challenges

Recent efforts in negotiating the MOA between DOE-BHSO and the NYSHPO has highlighted the potential for increased historic exposure for the Lab and the local community. Discovery Park is planned as a Public-Private partnership and the placement of kiosks at various locations in the development including the Science User Support Center will allow the general public to gain easy access to some of the history of the BNL site. Future efforts may build on this approach.

Fermi National Accelerator Laboratory (FERMILAB)

Introduction

Fermilab is located approximately 37 miles west of Chicago, IL on 6,800 acres that straddle Kane and DuPage counties. These ten square miles were donated by the State of Illinois to the Atomic Energy Commission in 1967 to be the home of the National Accelerator Laboratory. When purchased, the site consisted of 77 farmsteads, a Pioneer Cemetery, and the subdivision of Weston. The first proton beam was produced in April 1969, and in 1972 the laboratory was renamed Fermi National Accelerator Laboratory in honor of Enrico Fermi. Today the laboratory consists of a series of large particle accelerators devoted to the Department of Energy, Office of Science's High Energy Physics program. Physicists utilize accelerators and their associated detectors to study the most fundamental particles and forces of nature.

Fermilab employs approximately 1,700 people and hosts as many or more visiting scientists and students. The laboratory is organized into several programmatic areas that include research; operations; information management/computing; accelerators; technology and; environment, safety, health & quality. Employees in these areas may work in office environments, construction areas, technical shops, computing centers, etc. Because the majority of the site's 6,800 acres is natural habitat for wildlife the Roads & Grounds Department maintains the site and spearheads the efforts for land stewardship and restoration. Fermilab also has an Ecological Land Management committee that makes recommendations regarding wildlife habitat and native prairie restoration.

Fermilab manages its cultural resources program in accordance with Executive Order 13287 "Preserve America", DOE Policy 141.1 "Management of Cultural Resources, and Fermilab's Cultural Resource Management Plan. Fermilab and its contractor Midwest Archaeological Research Services, Incorporated (MARS) updated the CRMP in 2015 and it will be updated again in 2022. As described in the CRMP, MARS completed Phase I archaeological surveys for the entire Fermilab site, and 108 archaeological and architectural sites have been recorded with the Illinois Historic Preservation Agency (IHPA). Of the 108 sites, 4 sites are eligible for inclusion on the National Register of Historic Places , 71 sites are not eligible, and 33 sites require Phase II testing to determine their NRHP eligibility.

Fermilab is building a new experiment called the Long Baseline Neutrino Facility and Deep Underground Neutrino Experiment (LBNF/DUNE) that will generate a high-intensity neutrino beam that will be directed and travel underground through the Earth at depths up to 20 miles from Fermilab to detectors located 1 mile underground at the Sanford Underground Research Facility (SURF) located in Lead, South Dakota. SURF is located at the former Homestake gold mine that is in the Lead Historic District.

Identifying Historic Properties

Fermilab will continue to utilize its Geographic Information System for future construction and excavation projects at Fermilab. The GIS provides information to engineers and others who may want to disturb land around the Fermilab site for construction or infrastructure repairs. The "archeological" layer indicates exclusion zones where excavating is either totally restricted or requires approval prior to digging. Fermilab has a robust review process for reviewing proposed excavations that ensures no historic locations or properties are disturbed without review.

Protecting Historic Properties

Following the 2015 Cultural Resource Management Plan, DOE evaluated the Site 56 Horse Barn, at the Fermilab site in Batavia, in a Phase II Report. With the Illinois Department of Natural Resources (IDNR) State Historic Preservation Office approval, the barn was demolished in 2018.

Throughout 2018, 2019 and 2020, DOE continued to manage Section 106 activities regarding construction and operation of the LBNF/DUNE at SURF according to a Programmatic Agreement that was signed in 2015. Signatories to the PA included DOE, South Dakota State Historic Preservation Office, Advisory Council on Historic Preservation, and South Dakota Science and Technology Authority (SDSTA). Invited signatories included the City of Lead, the City of Deadwood, and the South Dakota Game, Fish and Parks. There were also 22 invited concurring parties to the PA, including Fermilab and 19 American Indian Tribes. None of the American Indian Tribes signed the PA.

Under the 2015 Programmatic Agreement for National Historic Preservation Act activities at Sanford Lab in South Dakota, which is in the Lead Historic Mining District, DOE initiated Section 106 consultation for the LBNF Conveyor in 2018. DOE received a "No Adverse Effect" determination from the South Dakota SHPO that same year.

Neither Fermilab nor SURF plan to sell, lease, exchange or transfer any of their historic properties over the next three years. Fermilab and SURF are both meeting the goals and requirements of Executive Order 13834 by preparing and implementing annual Site Sustainability Plans (SSP). SSPs will continue to be prepared over the next three years.

Fermilab will follow the procedures in the CRMP, which will be revised in 2022, to protect Fermilab's historic properties. Phase II archaeological testing will be conducted for the remaining sites as necessary. As LBNF/DUNE construction activities proceed, Fermilab and SURF will implement the Section 106 procedures in the PA for future projects to be conducted at SURF in South Dakota.

Using Historic Properties

There are three properties that the IDNR SHPO has concurred are eligible to be listed on the National Register of Historic Places (Site 29 Director's House, Site 58 House, and Site 65 Barn). In addition, there are several sites that will require Phase II testing at some point in the future (Wilson Hall will be 50 years old next year). Fermilab will pay close attention to the proposed activities for these facilities and conduct archaeological surveys when necessary. None of the historic properties located at Fermilab contribute to the local economies or tourism. However, Fermilab is an open site with thousands of visitors coming to Fermilab each year.

Many of the facilities on the Fermilab site in Batavia have reached the 50-year minimum threshold for potential consideration of inclusion in the NRHP. Fermilab will pay close attention to the proposed activities for these facilities and conduct archaeological surveys when necessary. Artifacts recovered during Fermilab archaeological investigations are curated at the Illinois State Museum in Springfield, Illinois. Fermilab cultural resource records and reports are kept on file at Fermilab by the Environment, Safety, and Health Section and by the IHPA.

Successes, Opportunities and Challenges

The PA has been a success in that it provides a formal mechanism for Section 106 consultation for projects at SURF. However, the PA has been challenging because there are responses for 26 stakeholders to track and the 19 American Indian Tribes do not normally respond to the Section 106 submittals. None of the historic properties located at SURF contribute to the local economies or tourism. However, the Lead Historic District and the associated Visitors Center bring tourism to Lead, Deadwood, and the Black Hills.

In 2018, the Pioneer Cemetery was vandalized. Under an IDNR SHPO permit, the tombstones in the Pioneer Cemetery were repaired/restored in 2018. A detailed report was commissioned and completed by MARS, entitled, *The Future and It's Past, Fermi National Accelerator Laboratory and It's Pioneer Cemetery, Brief Cemetery History and Complete Vandalism Report.* Heightened security measures have been instituted since this incident occurred.

Site 56 Horse Barn

Sanford Underground Research Facility (SURF) located in Lead, South Dakota

Pioneer Cemetery

Pioneer Cemetery Vandalism

Farm Book 29 (Fermilab Directors Residence)

Farm Book 58 (Samuel and Lucy Bartholomew Farmstead and most recently home to former Fermilab director and Nobel laureate Leon Lederman)

Farm Book 65 barn (Sanford and Jennie Watson Farmstead)

Hanford Site

Introduction

Geographic Setting

The Hanford Site is located in the Columbia Basin, which occupies a large area extending from the eastern slopes of the Cascade Range to the western slopes of the Blue Mountains. The area contains limited topographic relief comprised predominantly of undulating or rolling hills. Steep slopes are only present in areas where the major regional rivers have eroded basalt deposits creating canyons and buttes (Franklin and Dyrness 1973).

Within the Columbia Basin, the Pasco Basin is bound by the Rattlesnake Hills and Umtanum Ridge on the west, the Wahluke Syncline to the north, Horse Heaven Hills and Wallula Gap to the south, and Toe of the Palouse Slope to the east. This sub-region includes the lower Yakima, lower Snake, and middle Columbia Rivers. The environment of the Pasco Basin today is described as a semiarid, low elevation sagebrush steppe. Average monthly temperatures (24-hour average) range from -0.7 °C (31 °F) in January to 24.7 °C (76 °F) in July, with annual precipitation averaging less than 7 inches per year. Most precipitation currently comes from winter rainfall (Fecht et al. 2004). Within the setting of the Pasco Basin lies the Hanford Nuclear Reservation also known as the Hanford Site.

Cultural/Historic Context

The archaeological record of the Mid-Columbia Basin bears evidence of more than 10,000 years of human occupation (Benson et al. 1989; Galm et al. 1981; Green 1975; Morgan et al. 2001; Nelson 1969; Rice 1980; Sharpe and Marceau 2001; Swanson 1962; Thoms et al. 1983; Walker 1998). The Hanford Site is located within the Southern Columbia Plateau region that was occupied by various Native American groups that shared similar social, political and subsistence patterns. Groups in the region include the Wanapum, Yakama, Umatilla, Nez Perce, Walla Walla, Cayuse, Palouse and other neighboring groups (Fagan 2000; Schuster 1998; Stern 1998). While there has been continual development in the region, there are still places that remain largely undisturbed including the majority of the Hanford Site.

The Lewis and Clark expedition of 1805 began the Euro-American exploration and settlement of the region. The explorers sought trade items from Native Americans and trade routes were established (Mendenhall 2006; Parker 1986; Sharpe 1999; Stapp et al. 2005). Gold miners, livestock producers, and homesteaders soon followed. The Homestead Act of 1862 enabled legal land ownership to those 21 years of age or older who were willing to live on and develop the land. With the development of irrigation networks, the Hanford area became a highly productive agricultural area with numerous farms and orchards throughout the irrigated lands. The small towns of White Bluffs and Hanford were established ca. 1861 and 1907, respectively (Mendenhall 2006; Parker 1986; Sharpe 1999; Stapp et al. 2005).

In 1942 the U.S. government took control of the Hanford area for the top secret Manhattan Project, which sought to establish plutonium production facilities for national defense. Production of materials for nuclear weapons remained the main mission of the site until the late 1980s and the end of the Cold War (Marceau et al. 2003). In 1989, with the Hanford Site no longer producing plutonium, the site mission shifted to waste management and environmental cleanup. At the onset of the cleanup mission the focus was to mitigate or resolve immediate hazards such as highly contaminated spent fuel stored in leaking basins. As the cleanup mission has progressed over the last 20 plus years, many of the

immediate hazards have been resolved and the United States Department of Energy is working on mitigating long-term risks to the environment, including treatment of contaminated groundwater and the retrieval, treatment, and disposal of remaining waste.

Section 106 at Hanford

The methods for compliance with Section 106 of the National Historic Preservation Act as well as other preservation laws, regulations and orders is governed by the Hanford Cultural Resource Management Plan (HCRMP). The present version of the HCRMP was published in 2003 and is currently being revised by DOE. The HCRMP defines the responsibilities, requirements, and methods for managing cultural resource compliance on the Hanford Site. Federal Laws relating to cultural resources management require the DOE to identify evaluate and manage cultural resources under its control and jurisdiction. DOE Order 141.1 (Department of Energy Management of Cultural Resources) Requires DOE Field Offices to develop, implement, and periodically review the cultural resources management plan at all DOE facilities and Government-owned, contractor-operated facilities as needed.

B Reactor (105-B)

The 105-B Reactor (B Reactor, 105-B, or the 105-B Building in the 100-B/C Area at Hanford) is a contributing property to the Hanford Site Manhattan Project and Cold War Era Historic District, a Signature Facility selected by Department of Energy Headquarters (DOE-HQ) for its association with the Manhattan Project, a National Register-listed property, a National Historic Landmark (NHL), and a component of the Manhattan Project National Historical Park (Marceau et. al. 2003). The B Reactor is a public-federal structure designated as a National Historic Landmark under Criterion 1 as the first production-scale nuclear reactor, as well as under Criterion 4 as the model for World War II and Cold War reactors. B Reactor played a significant technological role in both the Manhattan project and in shaping the Cold War arms race.

The National Historic Landmark nomination form provides the following description:

> The B Reactor is a deactivated water-cooled, graphite-mediated nuclear reactor, built from 1943-44 as part of the Manhattan Project to produce plutonium for nuclear weapons. The reactor produced fissionable material from 1944 until its deactivation in 1968. It is contained inside the 105-B reactor containment building in the 100-B/C area at the Hanford Site, near Richland, Benton County, Washington. The reactor together with 105-B building and its associated 116-B exhaust stack comprise the B Reactor site described in this nomination, whose period of significance spans from 1943 until 1952.

The exhaust stack is connected to the building via a very large above-ground concrete duct.

In 1943, the Du Pont corporation initiated construction of the B Reactor (Marceau et. al. 2003). This nuclear reactor (formerly known as an atomic pile) was an instrument used to transmute uranium into plutonium. B Reactor produced plutonium utilized in the Trinity Test, the world's first-ever detonation of a nuclear device, as well as in the "Fat Man" atomic bomb detonated above Nagasaki, Japan, during World War II. The B Reactor was built in 13 months and operated until 1968. It was temporarily shut down from 1946-1948, after the mission was thought complete. Plutonium production resumed during the Cold War Era. The reactor is recognized as a modern marvel of engineering and heavy construction and was used as the model for construction of subsequent piles.

The B Reactor was reactivated in 1948 as part of the effort to increase plutonium production, ushering in the Cold War Era at 105-B. Power levels at 105-B were taken to a power rating 10% higher than its nameplate rating, with greater power levels increasingly brought on over the next 20 years (Gerber 1993). A project, Reactor Plant Modifications for Increased Production, was undertaken in order to retrofit existing piles in 1956 so that they could run at higher power levels. These improvements resulted in a power output ten times higher than what B Reactor had originally been designed.

In 2015, the United States Senate followed the House of Representatives in creating the Manhattan Project National Historical Park, comprised of historical sites at Hanford as well as at Los Alamos, New Mexico, and Oak Ridge, Tennessee. Today, this multi-site Historical Park is a collaborative effort between the National Park Service (NPS) and the Department of Energy.

B Reactor (105-B) Under Construction

Identifying Historic Properties

DOE holds a variety of both published and non-published sources relating to the Hanford Site. The types of documents housed in the DOE archives include: archaeological survey reports and project files dating from 1987 to the present, archaeological site files, historic building documentation, technical reports, journal articles, books, historic photographs and aerials, engineer drawings, and historic maps. All cultural resource records and reports are currently housed in the secure Cultural and Historic Resources Program (CHRP) Records Room within the Richland Federal Building. Access to the secure room is granted by request to the CHRP Records Manager as well as the DOE CRP Manager. Cultural Resource reports are also available through the Washington State Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) database.

In 2014, CHRP transitioned to a paperless record keeping system. All records and additional reports dating from 1987 to 2014 are housed in the secure room. All archaeological survey reports, project files, and archaeological sites & isolate records have been scanned and are stored on the secure CHRP server. The CHRP is currently working to scan reference documentation stored in the CHRP Records Room for addition into the server. Access to the CHRP server is granted by request to the CHRP Records Manager as well as the DOE CRP Manager.

Geographic Information Systems Digital Database

Archaeological survey data as well as information relating to archaeological sites/isolates on the Hanford Site are currently stored in the CHRP GIS database. Spatial and contextual information on archaeological surveys conducted as well as archaeological sites/isolates are added to the CHRP GIS database at the time a NHPA Section 106 project or Section 110 annual report is completed. Copies of the CHRP database are transmitted biannually, or as needed, to Hanford Site Tribes and other federal agencies operating within the Hanford Area, for use in the completion of NHPA Section 106 compliance work and documentation. The corresponding electronic files are also updated with new documentation for use by contractor cultural resources staff for literature reviews and background research. This information is also available through the DAHP WISAARD database.

The CHRP Section 106 Database houses all of the NHPA Section 106 compliance data completed on Hanford Site from 1987 to present. The database resides on the Hanford Local Area Network (HLAN) Network on a sequel database server with a web application face running on a Cold Fusion Server. The database is used to track all completed and ongoing NHPA Section 106 projects; all Memoranda of Agreement and status of stipulation completion; and has output tables to aid in weekly, monthly, and annual reporting. Only qualified archaeologists working for the CHRP have access to the database for internal project tracking.

Conducting NHPA as an ARAR to CERCLA

The Environmental Protection Agency interprets the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) section 121 requirements to meet Applicable or Relevant and Appropriate Requirements (ARARs) as applicable to all remedial activities undertaken pursuant to CERCLA. The National Historic Preservation Act is identified as an ARAR therefore CERCLA remedies must comply with the NHPA. The DOE in partnership with the EPA has developed new methods to conduct NHPA as an ARAR to CERCLA on the Hanford Site. The new process allows for information about historic properties and NHPA processes to be considered in making decisions about remedial actions under CERCLA.

Inclusion of inventory level cultural resources data in Remedial Investigation, Feasibility Study (RI/FS) documents provides the opportunity to consider impacts to resources during the development and selection of remedy alternatives. Continuing the section 106 process through identification of historic properties and evaluation of effects is conducted once an alternative remedy is selected and remedial actions are defined through the development of a Proposed Plan (PP). Documentation of how the agency met the substantive requirements of NHPA as an ARAR either though a finding of No Historic Properties Affected, No Adverse Effects or the development of an MOA to resolve Adverse Effects to Historic Properties is then incorporated in the development of a final Record of Decision (ROD).

Protecting Historic Properties

Real Property

In 2018, the DOE Richland Operations Office National Park Program was honored with a Special Achievement Award from the Washington State Department Archaeology and Historic Preservation for the rehabilitation of the historic White Bluffs Bank. Constructed in 1907 and now part of the Manhattan Project National Historical Park, the bank had fallen into extreme disrepair and was in danger of collapse. Following the rehabilitation project, DOE opened the bank to visitors for the first time during the 2018 public tour season. It was the first time the bank was accessible to the public since the land was taken for the top-secret Manhattan Project in 1943.

DOE is also planning for near term preservation work on the remaining three pre-Manhattan Project MAPR properties at Hanford, with building evaluations to be performed in FY 2021, and prioritized stabilization work to follow.

Personal Property

DOE's National Park Program manages the Manhattan Project and Cold War Collection of artifacts, photographs, archive material, and ephemera. Since 2015, DOE, through its Hanford contractor, has partnered with Washington State University Tri Cities (WSU-TC) for curation of and public access to the collection. Moving the federal collection off the Hanford Site and into WSU-TC's storage facilities enabled

DOE to bring the collection into compliance with 36 CFR 79, and provide electronic access to the collection. WSU-TC also loans Hanford artifacts to museums, conducts research and education projects on the collection, and is publishing a book series on Hanford history through WSU Press.

With respect to archaeological resources, the Department of Energy, Richland Operations Office (DOE-RL), partners with the Wanapum Heritage Center for the care and protection of material recovered from the Hanford Site. The Wanapum live on the Columbia River, and lived on and utilized what is now known as the Hanford Site at the time of land acquisition by the federal government. Storage space for the archaeological collection at Washington State University, Tri-Cities (WSU-TC), became no longer available, so different storage was needed to meet 36 CFR 79, Curation of Federally Owned and Administered Archaeological Collections. A move of the archaeological collection was conducted in 2019, per the Memorandum of Understanding for Curatorial Services between the Department of Energy, Richland Operations Office and the Wanapum Heritage Center, signed November 5, 2018. The repository meets federal standards for archaeological collections storage and depositing the collection at the new facility will help DOE-RL meet regulatory requirements outlined in 36CFR79.

Using Historic Properties

DOE's National Park Program continues to sponsor a vibrant annual public tour program at Hanford that enables people of all ages and nationalities to visit the park's historic resources from generally spring through late fall. Visitors can choose between a half-day B Reactor tour and a half-day tour of the pre-Manhattan Project historic facilities. DOE's contractor provides electronic, phone, and in-person registration; trained docents; and round trip transportation from a publicly accessible visitor center. DOE also supports a school outreach program, under which several thousand elementary, middle, and high school students have visited the Park over the last three years. The free public tours are available up to six days per week during peak season, and have been attended by people from all 50 states and more than 90 countries worldwide. Visitors to the park are averaging about 14,000 per year; the local destination marketing organization estimates the economic benefit of the national park tours at Hanford to be between $2.2 million and $2.8 million.

Contributing to Local Communities

The 72nd Annual Northwest Anthropological Conference (NWAC) was held in Tri-Cities, Washington. In an effort to contribute to the local community, the CHRP hosted a symposium on the history and archaeology of the Hanford Site. Symposium contributors included the DOE Cultural Resources Program Manager, former and current staff of CHRP, as well as regional researchers and a partner from WSU-TC.

Symposium: *Slices of History and Cultural of the Tri-Cities and the Hanford Site*

Abstract: *The Tri-Cities is predominantly associated with the Manhattan Project and Cold War Era activities of the Hanford Nuclear Reserve and subsequent clean-up activities. These periods impacted the prehistory, history, and culture of the area dramatically. This session will explore these periods as well as take a broader look into the complex past of this area.*

The papers presented in the symposium provided an opportunity to engage the public with the archaeology and history of the Hanford Site as well as the preservation work performed there.

Idaho National Laboratory Site

Introduction

Site Location

The Idaho National Laboratory (INL) Site encompasses about 890 square miles of the upper Snake River Plain in southeastern Idaho. Over 50% of the INL Site is located in Butte County and the rest is distributed across Bingham, Bonneville, Clark, and Jefferson counties. The INL Site extends 39 mi from north to south and is approximately 38 mi at its broadest east-west portion. By highway, the southeast boundary is approximately 25 mi west of Idaho Falls. Other towns surrounding the INL Site include Arco, Atomic City, Blackfoot, Rigby, Rexburg, Terreton, and Howe. Pocatello is 53 mi to the southeast. Federal lands surround much of the INL Site, including Bureau of Land Management lands and Craters of the Moon National Monument and Preserve to the southwest, Challis National Forest to the west, and Targhee National Forest to the north. Mud Lake Wildlife Management Area, Camas National Wildlife Refuge, and Market Lake Wildlife Management Area are within 80 km (50 mi) of the INL Site. The Fort Hall Indian Reservation is located approximately 37 mi to the southeast.

Environmental Setting

The INL Site is located in a large, relatively undisturbed expanse of sagebrush steppe. Approximately 94% of the land on the INL Site is open and undeveloped. The INL Site has an average elevation of 4,900 feet above sea level and is bordered on the north and west by mountain ranges and on the south by volcanic buttes and open plain. Lands immediately adjacent to the INL Site are open sagebrush steppe, foothills, or agricultural fields. Agriculture is concentrated in areas northeast of the INL Site. About 60% of the INL Site is open to livestock grazing. Controlled hunting is permitted but is restricted to a very small portion of the northern half of the INL Site.

The climate of the high desert environment of the INL Site is characterized by sparse precipitation (about 8.45 in./yr), warm summers (average daily temperature of 65.1°F, and cold winters (average daily temperature of -18.7°F), based on observations at Central Facilities Area from 1950 through 2017. The altitude, intermountain setting, and latitude of the INL Site combine to produce a semiarid climate. Prevailing weather patterns are from the southwest, moving up the Snake River Plain. Air masses, which gather moisture over the Pacific Ocean, traverse several hundred miles of mountainous terrain before reaching southeastern Idaho. Frequently, the result is dry air and little cloud cover. Solar heating can be intense, with extreme day-to-night temperature fluctuations. Basalt flows cover most of the Snake River Plain, producing rolling topography.

Over 400 different kinds of plants have been recorded on the INL Site. Vegetation is dominated by big sagebrush (Artemisia tridentata) with grasses and wildflowers beneath that have been adapted to the harsh climate. The INL Site is also home to many kinds of animals. Vertebrate animals found on the INL Site include small burrowing mammals, snakes, birds, and several large mammals. Published species records include six fishes, one amphibian, nine reptiles, 164 birds, and 39 mammals.

The Big Lost River on the INL Site flows northeast, ending in a playa area on the northwestern portion of the INL Site, called the Big Lost River Sinks. Here, the river evaporates or infiltrates to the subsurface, with no surface water moving off the INL Site. Normally the riverbed is dry because of upstream irrigation and rapid infiltration into desert soil and underlying basalt. The river rarely flows onto the INL Site. Good carry over of water in the Mackay Reservoir paired with a large snowpack and above-normal water levels behind the Mackay Reservoir allowed the river to flow onto the INL for most of 2018 and fill the Big Lost River Sinks.

Fractured volcanic rocks under the INL Site form a portion of the eastern Snake River Plain aquifer, which stretches 199 mi from Island Park to King Hill, which is 6 mi northeast of Glenns Ferry and stores one of the most bountiful supplies of groundwater in the nation. An estimated 200 to 300 million acre-feet of water is stored in the aquifer's upper portions. The aquifer is primarily recharged from the Henrys Fork and the South Fork of the Snake River, and to a lesser extent from the Big Lost River, Little Lost River, Birch Creek, and irrigation. Beneath the INL Site, the aquifer moves laterally southwest at a rate of 5 to 20 ft/day. The eastern Snake River Plain aquifer emerges in springs along the Snake River between Milner and Bliss, Idaho. Crop irrigation is the primary use of both surface water and groundwater on the Snake River Plain.

History of the INL Site

The geologic events that have shaped the modern Snake River Plain took place during the last 2 million years (Ma). This plain, which arcs across southern Idaho to Yellowstone National Park, marks the passage of the earth's crust over a plume of melted mantle material.

The volcanic history of the Yellowstone-Snake River Plain volcanic field is based on the time-progressive volcanic origin of the region, characterized by several large calderas in the eastern Snake River Plain, with dimensions similar to those of Yellowstone's three giant Pleistocene calderas. These volcanic centers are located within the topographic depression that encompasses the Snake River drainage. Over the last 16 Ma, a series of giant, caldera-forming eruptions occurred, with the most recent at Yellowstone National Park 630,000 years ago. The youngest silicic volcanic centers correspond to the Yellowstone volcanic field that are less than 2 Ma old and are followed by a sequence of silicic centers at about 6 Ma ago, southwest of Yellowstone. A third group of centers, approximately 10 Ma, is centered near Pocatello, Idaho. The oldest mapped silicic rocks of the Snake River Plain are approximately 16 Ma and are distributed across a 93-mi-wide zone in southwestern Idaho and northern Nevada; they are the suspected origin of the Yellowstone-Snake River Plain.

Humans first appeared on the upper Snake River Plain approximately 11,000 years ago. Tools recovered from this period indicate the earliest human inhabitants were hunters of large game. The ancestors of the present-day Shoshone and Bannock people came north from the Great Basin around 4,500 years ago. People of European descent began exploring the Snake River Plain between 1810 and 1840; these explorers were trappers and fur traders seeking new supplies of beaver pelts. Between 1840 and 1857, an estimated 240,000 immigrants passed through southern Idaho on the Oregon Trail. By 1868, treaties had been signed to relocate the native population to the Fort Hall Reservation. During the 1870s, miners entered the surrounding mountain ranges, followed by ranchers grazing cattle and sheep in the valleys.

In 1901 a railroad was opened between Blackfoot and Arco, Idaho. By this time, a series of acts (the Homestead Act of 1862, the Desert Claim Act of 1877, the Carey Act of 1894, and the Reclamation Act of 1902) provided sufficient incentive for homesteaders to build diversionary canals to claim the desert. Most of these canal efforts failed because of the extreme porosity of the gravelly soils and underlying basalts.

During World War II, large guns from U.S. Navy warships were retooled at the U.S. Naval Ordnance Plant in Pocatello, Idaho. These guns needed to be tested, and the nearby uninhabited plain was put to use as a gunnery range, known then as the Naval Proving Ground. The U.S. Army Air Corps also trained bomber crews out of the Pocatello Airbase and used the area as a bombing range. After the war ended, the nation turned to peaceful uses of atomic power. DOE's predecessor, the U.S. Atomic Energy Commission, needed an isolated location with ample groundwater supply on which to build and test nuclear power reactors. In 1949, the Naval Proving Ground became the National Reactor Testing Station. In 1951, Experimental Breeder Reactor-I became the first reactor to produce useful electricity. In 1955, the Boiling-Water Reactor Experiments-III reactor provided electricity to Arco, Idaho – the first time a nuclear reactor powered an entire community in the United States. The laboratory also developed prototype nuclear propulsion plants for Navy submarines and aircraft carriers. Over time, the Site evolved into an assembly of 52 reactors, associated research centers, and waste handling areas. The National Reactor Testing Station was renamed the Idaho National Engineering Laboratory in 1974 and Idaho National Engineering and Environmental Laboratory in 1997 to reflect the Site's leadership role in environmental management.

With renewed interest in nuclear power, DOE announced in 2003 that Argonne National Laboratory-West and the Idaho National Engineering and Environmental Laboratory would be the lead laboratories for development of the next generation of power reactors. On February 1, 2005, Battelle Energy Alliance took over operation of the laboratory, merged with Argonne National Laboratory-West, and the facility name was changed to Idaho National Laboratory. At this time the site's cleanup activities were moved to a separate contract, the Idaho Cleanup Project, which is currently managed by Fluor Idaho, LLC. Research activities, which include projects other than nuclear research such as National and Homeland Security projects, were consolidated in the newly named Idaho National Laboratory. The INL Site mission is to operate a multi-program national research and development laboratory and to complete environmental cleanup activities stemming from past operations. The Department of Energy, Idaho Operations Office (DOE-ID) receives implementing direction and guidance primarily from two DOE Headquarters offices, the Office of Nuclear Energy and the Office of Environmental Management. The Office of Nuclear Energy is the Lead Program Secretarial Office for all DOE-ID-managed operations on the INL Site. The Office of Environmental Management provides direction and guidance to DOE-ID for environmental cleanup on the INL Site and functions in the capacity of Cognizant Secretarial Office.

Information in the previous sections is excerpted from the Idaho National Laboratory Site Environmental Report for Calendar Year 2018 (DOE/ID-12082 (18)), available at *http://www.idahoeser.com/publications.htm*

Approach to Section 106

Numerous historic properties, both archaeological and architectural, are present within the boundaries of the INL site. There are two historic properties within INL that are listed on the National Register of Historic Places, Aviators Cave and Experimental Breeder Reactor One (EBR-I). Aviator's Cave is a significant pre-contact archaeological site that is also important to the Shoshone-Bannock Tribes. EBR-I was designated a National historic Landmark in 1966 for its association with the history of nuclear reactor research.

The comprehensive INL Cultural Resource Management Plan provides a tailored approach to comply with legal mandates and implements DOE cultural resource policies and goals, while meeting the unique needs of the INL. A 2004 Programmatic Agreement, Concerning Management of Cultural Resources on the INL site, among DOE-ID, the Advisory Council on Historic Preservation, and the Idaho State Historic Preservation Office sanctions the establishment and continued update of the CRMP. In addition, the CRMP outlines the process for communication between DOE-ID and the ACHP, Idaho SHPO, the Shoshone-Bannock Tribes, and other INL stakeholders as mandated by law and DOE-ID agreements, as well as acting as providing INL employees and decision-makers with guidance on regulatory compliance as pertains to management of INL cultural resources.

The government-to-government relationship between DOE-ID and the Shoshone-Bannock Tribes is documented in An Agreement in Principle (AIP). The agreement also describes the technical and financial assistance DOE will provide to the American Indian Tribes. For more than two decades, DOE-ID and the INL contractor have participated in an important ongoing partnership with the Shoshone-Bannock Tribes based the AIP, enabling tribal and INL contractor staff to jointly conduct many general and project-specific activities. Regular, face-to-face meetings of the INL Cultural Resources Working Group (CRWG), with representatives from DOE-ID, the INL contractor, and the Shoshone-Bannock Tribes facilitate this important partnership.

Past Site Evaluations and Work on Historic Properties

Prior to FY2017, 2,842 pre-contact and historic archaeological resources had been identified, of which 1,422 are potentially eligible for listing on the NRHP. From 2004 to 2017, 752 historic architectural properties were inventoried and evaluated for listing in the NRHP, including 244 historic architectural properties associated with World War II and nuclear energy research historic contexts, and eligible for nomination to the NRHP. Of these properties, 95 are extant; 149 have been demolished since 2004 following mitigation procedures outlined in the INL CRMP. Of the 95 extant historic architectural properties, 78 are operating research or support facilities, while 17 are on stand-by awaiting new program operations or shutdown pending deactivation, decontamination, and decommissioning.

During World War II, the area that now forms the central core of the INL site was designated as the Arco Naval Proving Ground (NPG). Additionally, the U.S. Army Air Force, flying out of Pocatello, used two areas currently encompassed by the INL site for high altitude bomber training. Ordnance from the U.S. Navy's Pacific Fleet was tested at the Arco NPG, after undergoing maintenance at the Naval Ordinance Plant (NOP) in Pocatello. During the post-war period, the Army-Navy explosives safety board conducted a variety of tests at areas within the NPG to evaluate and revise existing standards for the safe storage and transport of ordnance and munitions. In FY2014, in response to a DOE-ID proposal to demolish five NRHP eligible structures associated with the Arco NPG, DOE-ID, the Idaho

SHPO, and the ACHP engaged on formal consultation, resulting in development of a memorandum of agreement stipulating measures to mitigate the adverse impact demolition will have on these historic properties. The mitigation measures included completion of HALS documentation, creation and installation of interpretive signage in a publicly accessible location, and retention of original features of the Proofing Area (concussion wall, gun proofing and storage alleys, gantry crane, transfer rail truck, and transfer tracks).

Pre-World War II historic properties on the INL include dry canal channels and associated structures left from early 20th century irrigation projects, homestead sites, railroad construction campsites, and sections of the Oregon Trail.

Identifying Historic Properties

From FY2017 through FY2019, a total of 320 Section 106 review projects were conducted; 101 for archaeological properties and 220 for historic architectural properties. Field surveys in support of these projects covered more than 6,000 acres in addition to the nearly 56,000 acres surveyed prior to FY2017. This represents approximately 10% of INL Site lands. Intensive and reconnaissance field surveys were conducted as well as shovel test excavations to determine the presence of subsurface cultural materials. After an extensive program evaluation, the Department of Energy Idaho Operations Office (DOE-ID) determined legacy issues existed with past practices in data collection and management. To address these legacy issues, the Idaho National Laboratory contractor obtained historical data on file with the Idaho State Historic Preservation Office and will perform a data reconciliation effort to identify missing or superseded data. DOE-ID and INL are also striving to ensure all newly-generated data submitted to the Idaho SHPO are in full compliance with Idaho SHPO's published guidelines.

After an extensive performance evaluation, DOE-ID determined there was substantive room for improvement for conducting and documenting Section 106 reviews, increasing the level of awareness and knowledge project managers have with respect to NHPA compliance requirements, and strengthening the formal structure of the INL Cultural Resource Program with respect to formal procedures for implementing NHPA requirements. Since FY2017, the INL contractor has developed procedures for Section 106 and 110 reviews, conducting subsurface evaluations, managing geospatial data, and managing cultural resource records. Awareness has been increased through training of maintenance and project management staff on the Section 106 process and the need for early involvement of cultural resource personnel to help with proper planning and coordination.

In 2019, a full-time certified archivist was hired to develop and manage the current, and future, archival collections. Since that occurred, advancements have been made in the archives and special collections. These accomplishments include the following:

- Completed a draft Archives & Special Collections Management Plan which was submitted to management for review and approval.
- Developed research room rules for INL Archives & Special Collections researchers.
- Consolidated existing digital records inventories into a single, usable, and accessible Excel file.
- Completed preliminary processing and created an inventory for approximately 922 maps, drawings and plans contained in 30 boxes and multiple map drawers. Created an inventory

of the 6 cubic feet of Argonne National Laboratory - West records at the Museum of Idaho for use by the INL Archives & Special Collections and provided the Museum of Idaho with a copy. Organized and categorized legacy records of the INL Archives operations and training materials. Labeled 80 of the existing map drawers with Accession Numbers, Building Acronym, and Folder Numbers of the drawer contents.

- Created 1200 dpi high resolution scans of 260 photographic negatives from the 1949 Aerial Survey and established a standardized file naming format for the resulting image files.

As discussed above, the INL contractor is performing data reconciliation between historical INL historic property data and data from the Idaho SHPO database. Newly generated data are reviewed prior to submittal to Idaho SHPO for compliance with published guidelines. DOE-ID also would like to establish a data sharing agreement to govern exchange of all future data collected for DOE-ID undertakings on the INL Site. This agreement will most likely be covered in a broader agreement, such as a revised programmatic agreement.

Protecting Historic Properties

From FY2017 to FY2019, both DOE-ID and the INL contractor experienced staffing changes. There was a net increase in the size of the INL Cultural Resource Management Office (CRMO) staff. Two archaeologists and a geoscientist retired or took other jobs. Five archaeologists were then hired in addition to an archivist and two architectural historians. The longest-serving DOE-ID Cultural Resource Coordinator retired in FY2019 and those responsibilities were transferred to an existing DOE-ID staff member. The model used throughout the DOE complex is the management and operations contract, where a relatively small DOE staff provides oversight to a larger, highly-specialized contractor staff. At the INL Site, there is one DOE-ID Cultural Resource Coordinator who provides oversight to INL cultural and historic property management, including the operations of the INL CRMO that consists of ten cultural resource professionals

DOE-ID has developed a memorandum of understanding to conduct research on volcanic glass with the U.S. Forest Service and Bureau of Land Management. As a rule, volcanic glass is the most abundant archaeological material found on precontact sites on the INL and throughout Southern Idaho. During FY2018-2019, the INL CRMO developed a robust in-house obsidian sourcing program to examine how changes in the geography, climate, and distribution of resources on the Snake River Plain affected patterns of mobility through lands now managed by the INL. Key developments in 2019 include: (1) an upgrade in instrumentation; and (2) development of a comprehensive volcanic glass reference collection for Southern Idaho. In September 2019, the INL CRMO acquired a state of the art 50 KeV Olympus Vanta XRF spectrometer capable of quantifying the trace-element composition of materials across 33 elements. Ongoing XRF research at the INL is designed to address how changes in regional climate and geography affected obsidian source use, seasonal mobility patterns, and travel corridors over time. Drawing on existing collections of temporally diagnostic artifacts from the INL and the Upper Snake River Field Office of the BLM (currently on loan from the Idaho Museum of Natural History (IMNH)), the INL CRMO will examine patterns of source use on the Eastern Snake River Plain during the Terminal Pleistocene and Early Holocene, complementing research on Lake Terreton described above. This research will contribute to our understanding of the precontact context of the INL and will allow the INL CRMO to incorporate obsidian sourcing into regular Section 106 evaluations of recontact sites on DOE lands. These studies

are ongoing and, with the permission of the Shoshone Bannock Tribes, will be incorporated into the upcoming revision of the INL CRMP.

A recent partnership with the Museum of Idaho (MOI) in Idaho Falls, Idaho was initially developed to assist the museum and its staff with an upcoming exhibit highlighting local Euro-American and Native American history. INL CRMO staff will be acting, in kind, as subject matter experts to assist the MOI staff in developing exhibits that are informative and highlight the extensive resources being preserved and studied at the INL and surrounding landscape. In FY2019, the DOE-ID and INL CRMO staff coordinated with MOI on the upcoming Way Out West exhibit, scheduled to open in December 2020. MOI will be developing exhibits specific to INL historic properties and their significance to southeastern Idaho. These exhibits will highlight Lake Terreton and its role in shaping Pre-Contact lifeways and settlement patterns in the Pioneer Basin as well as early 20th Century homesteads associated with the Carey Act canals designed to harness water from the Big Lost River. The INL will be providing information, in-kind contributions from subject matter experts, and financial support to ensure the successful launch of the exhibit. As part of Idaho's Archaeology and Historic Preservation month, the MOI hosted Archaeology Day and archaeologists from the INL CRMO assisted the museum in educating and informing the local Idaho Falls community on cultural material from private collections. Other events coordinated with MOI included a day trip for a teachers' group to historic homesteads, Goodale's Cut-off and a stage station on the Lost River as well as the Wasden site; a tour with MOI staff and about 15 local community members of the Wasden site; and assisted the museum in educating and informing the local Idaho Falls community on cultural material from private collections.

DOE-ID has an existing Programmatic Agreement with Idaho SHPO and the ACHP that allows for streamlining of Section 106 reviews. The PA was signed in 2004 before the INL Site Cultural Resource Management Plan had been developed and was largely focused on the development and review process for that Plan. Since then, the INL Site Cultural Resource Management program has developed and matured and DOE-ID sees a need to revisit that 2004 PA with the intention of developing a revised PA to better address a more comprehensive approach to compliance with Sections 106 and 110 of the NHPA. This will be a major effort that involves complete revision of the CRMP, development of historic contexts, inventories of archaeological and historic properties, and development of implementing procedures. DOE-ID has entered into several memoranda of agreement to address adverse effects to historic properties from DOE-ID undertakings where actions to fulfill stipulated mitigations are ongoing. One area where DOE-ID would like to explore alternatives to managing historic properties is collection and curation under 36 CFR 79. DOE-ID has an Agreement-in-Principle with the Shoshone-Bannock Tribes, who have cultural affiliation with INL Site lands. DOE-ID has been in discussions with the Tribes, Idaho SHPO, and ACHP to develop a formal approach that would respect the preferences of the Tribes to reduce or avoid the need to collect and permanently curate artifacts collected in association with cultural resource investigations for DOE-ID undertakings on the INL Site. The current language in 36 CFR 79 does not allow for discretion in this area and this is a significant issue for the Shoshone-Bannock Tribes and for DOE-ID. DOE-ID will continue to pursue alternatives that address the Tribes' concerns in this area and will continue to engage the Tribes in good faith through government-to-government consultation.

Using Historic Properties

DOE-ID supports INL's efforts to increase public awareness and interest in INL Site historic and historic properties through partnerships, such as those discussed above, and in developing an INL historic properties virtual tour that can be accessed by the public as they traverse the public highway through the INL Site. DOE-ID continues to support preservation of the Experimental Breeder Reactor I (EBR-I) national historic landmark located on the INL Site, which is open to the public free of charge from Memorial Day through Labor Day. Based on visitor logs, estimated visitors to EBR-I are between 5,000 and 10,000 annually.

DOE-ID's missions at the INL Site are growing and the availability of buildings and structures that can support new projects is an asset. Some INL Site facilities that provide unique or one-of-a-kind capabilities offer advantages to maintaining for future uses as compared to construction of new, similar facilities. Technical and cost feasibility in retrofitting and reusing existing properties and proximity to potential project development areas are also important considerations that influence decision making on the continued use or re-use of historic properties. DOE-ID recently performed an environmental assessment for use of DOE-owned High-Assay Low-Enriched Uranium stored at the INL. Several existing INL buildings (historic and other) are under consideration for the project. Additionally, DOE-ID is examining potential uses for the EBR II containment dome. DOE-ID originally planned to demolish the facility and is now looking at refurbishment to facilitate a future mission.

DOE-ID has not considered using Section 111 for any specific lease or exchange of historic properties other than to loan or gift artifacts for use in public displays such as through Museum of Idaho exhibits. Opportunities for using Section 111 could be identified in the future as INL Site use and missions evolve. One of the main obstacles to using Section 111 would be public access and security concerns relative to candidate historic properties.

Successes, Opportunities and Challenges

INL contractor staff also hosted an exclusive Goodale's Cutoff visitation day for descendants of James Slater, who died near the Big Lost River in 1862. His daughter, Nellie, provided an account of his death and burial in her journal. Based on Nellie's descriptions of landforms, INL staff were able to pinpoint the general location of James Slater's grave. On July 7, 2018, INL staff and DOE-ID representatives escorted Wilbur Chitwood, the grandson of James Slater, and his family to the possible location of James Slater's grave near the Big Lost River. The family placed a cement marker at the location temporarily and photographs of this event were taken on their behalf (see Figure 1).

Figure 1. Photograph of the Chitwood family at the possible grave site of James Slater.

The Fuel Processing Restoration (FPR) program was to be constructed in 1993 and housed in building CPP-691 at the Idaho Nuclear Technology and Engineering Center (formerly the Idaho Chemical Processing Plant). The FPR program was never fully realized, however, due to budgetary cuts. A complete, one-inch scale model of the processing equipment was constructed prior to the program shutdown. In FY-2018, CPP-691 was identified for use under a different mission, at which time the INL Archives and Special Collections acquisitioned the FPR model that was housed in the building.

In FY-2018, funding was allocated for removal of obsolete legacy equipment from various facilities across the INL Materials and Fuels Complex (MFC) to reduce the environmental liabilities and maintenance costs. Equipment slated for removal included gloveboxes, fume hoods, control consoles, and ancillary equipment. The Zero Power Plutonium Reactor (ZPPR) control room panels, located in the ZPPR Support Wing (MFC-774), fell under this statement of work for removal. MFC-774 is eligible for listing on the NRHP. The control consoles to be removed are original features of ZPPR, and integral to the historic significance of the building. To mitigate the adverse effect created by removal of these features, the control consoles were preserved and transferred to the INL Archives and Special Collections.

In FY2019, a systematic internal review and revamp of INL CRMO data management processes was initiated. One of the resulting outcomes from this review was the initiation of a complete digitization and organization of all legacy project files maintained by the INL CRMO. Institution of new file structures and naming systems designed to streamline data storage and future access, as well as developing more stringent and streamlined data collection protocols began in late FY2019. The newly hired archivist and records management specialists helped initiate, with the input of the INL CRMO staff, the development and implementation of metadata standards for records they create moving forward. The current plan for FY2020 and beyond include the following projects for the INL Archives and Special Collections:

- Identify records of historic program/project collections to transfer/accession into the INL Archives for permanent retention
- Accession, inventory, process and re-box existing collections in INL archive
- Complete preservation surveys of major INL collections (e.g. photographs, slides, tech library, architectural drawings, permanent records, etc.)
- Develop a plan to ensure physical records are stored in a National Archives and Records Administration (NARA) approved facility.
- Develop and prepare employee awareness and outreach tools regarding the role and importance of preserving archival records.

Lawrence Berkeley National Laboratory

Introduction

Lawrence Berkeley National Laboratory (LBNL, or Berkeley Lab) was founded as the "Berkeley Radiation Laboratory" in 1931 by Ernest Orlando Lawrence. A UC Berkeley physicist, Lawrence won the 1939 Nobel Prize for his invention of the cyclotron, a first-of-its-kind circular particle accelerator that opened the door to high-energy physics. Under Lawrence's direction, Berkeley Lab was also the conceptual birthplace of both "team" or collaborative science and "big science," two approaches that revolutionized the nature and pace of scientific research worldwide. Thirteen Nobel prizes are associated with Berkeley Lab. Seventy Lab scientists are members of the National Academy of Sciences. Thirteen scientists have won the National Medal of Science, the nation's highest award for lifetime achievement in fields of scientific research. Eighteen engineers have been elected to the National Academy of Engineering, and three scientists have been elected into the Institute of Medicine. In addition, Berkeley Lab has trained thousands of university science and engineering students who are advancing technological innovations across the nation and around the world.

Researchers at Berkeley Lab have discovered 16 elements and many dozens of isotopes, identified "good" and "bad" cholesterol, developed energy-saving windows, found the source of large-scale structure in the universe and revealed the existence of dark energy, explained photosynthesis, exposed the risk of radon, redefined the causes of breast cancer, made appliances pull their weight in energy efficiency, and revealed the secrets of the human genome. Significant Berkeley Lab discoveries span the very large (Nobel Prize-winning work on the expanding, accelerating universe); the very small (key discoveries of sub-atomic particles as well as a National User Facility for nano-scale research); the distant past (Nobel Prize-winning work supporting the Big Bang theory); and the future (climate modeling using the NERSC supercomputing system).

Berkeley Lab consists of about 76 buildings and numerous smaller structures (containers, sheds, etc.) and is located on a 200-acre site in the hills above the UC Berkeley campus that offers spectacular views of the San Francisco Bay. Berkeley Lab employs approximately 4,200 scientists, engineers, support staff, and students. Two LBNL facilities have Historic American Engineering Records filed in the Library of Congress: HAER CA-186-A University of California Radiation Laboratory Bevatron and HAER CA-186-B University of California Radiation Laboratory SuperHilac. Most of Berkeley Lab's main facilities have undergone historic evaluation pursuant to the National Historic Preservation Act.

In recent years, Berkeley Lab has developed a Cultural Resources Management Plan that governs the Department of Energy's identification, evaluation, and treatment of potential historic resources and facilities at the Berkeley Lab site. The CRMP further identifies how the Department of Energy is to interact with the California State Historic Preservation Officer and comply with national historic preservation laws and Department of Energy regulations. Under the CRMP, outside contractors with appropriate, certified historical expertise are used to investigate, evaluate, and prepare reports and DPR forms for the remaining unevaluated structures on the LBNL site. These reports are then compiled in LBNL's "living" CRMP document. The DOE Bay Area Site Office uses these reports and the expert recommendations of LBNL SMEs and contractor-historians to help determine when interactions with the California SHPO is warranted.

Identifying Historic Properties

LBNL has not changed its methodology but is following its established CRMP procedures for evaluating potential historic resources on site. Several additional structures have been evaluated since 2017 and a large-scale effort is underway in FY 2020 to complete an inventory of all (or nearly all) of LBNL's remaining, unevaluated major structures and buildings. This information is retained and managed as part of the CRMP by the Lab's Environmental Planner / Historical Resources program manager.

In addition to the aforementioned effort to complete any outstanding historical evaluations of on-site buildings and structures, there have been some minor, ad hoc efforts by various LBNL groups and individuals to inventory, display, and/or write about past scientific achievements, apparatus, and people.

The main on-going interactions LBNL has had during the past three years with outside partners is with five interested American Indian Tribes: the Costanoan Rumsen Carmel Tribe, the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Muwekma Ohlone Indian Tribe of the SF Bay Area, the Ohlone Indian Tribe, and the Indian Canyon Mutsun Band of Costanoan. LBNL contacts these Tribes and offers to engage in consultations whenever a project is undertaken that might affect potential on-site Native American resources.

Protecting Historic Properties

There have been no changes to any programs or procedures LBNL has in place to protect historic properties during the past three years.

During the past three years, LBNL has partnered with five (aforementioned) American Indian Tribes: the Costanoan Rumsen Carmel Tribe, the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Muwekma Ohlone Indian Tribe of the SF Bay Area, the Ohlone Indian Tribe, and the Indian Canyon Mutsun Band of Costanoan. LBNL contacts these Tribes and offers to engage in consultations whenever a project is undertaken that might affect potential on-site Native American resources. In addition, LBNL has developed an on-going relationship with a highly regarded historical consulting firm (JRP Historical, Inc.), which provides consistent and in-depth historical services to LBNL at quick notice and no learning curve regarding the LBNL site and its historical context.

An occasion for employing program alternatives such as Programmatic Agreements, Program Comments, and other tools to identify, manage, and protect LBNL's historic properties has not arisen during the past three years.

Using Historic Properties

The LBNL campus is a closed site (public access is allowed only under controlled conditions) and there are no significant historic properties and assets that would create a major attraction or financial opportunity for the local economy. Some artifacts of this sort were contributed to the Lawrence Hall of Science museum that is owned and operated by the University of California off of the LBNL site.

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and California Assembly Bill 52 (Native American consultations) are the main regulatory drivers -- along with the NHPA -- for investigating and treating historic properties at LBNL.

LBNL has not used Section 111 of the NHPA or other authorities to lease or exchange historic properties.

Successes, Opportunities and Challenges

The prime examples during the past three years of successes, opportunities, and challenges are:

- Solicitations for consultations with the five interested American Indian Tribes for the Lab's BioEPIC and Seismic Safety and Modernization projects.
- Provision of funds and LBNL management approval to engage LBNL's consulting historians to investigate and document the remaining unevaluated structures and buildings at the LBNL site.

The prime challenge the past three years have been:

- Lack of historical integrity of buildings due to the constant and rapid turn-over of building uses and building sites due to limited building space at LBNL.
- Loss of equipment and records in the distant past that make thorough historical assessment difficult.

Lawrence Livermore National Laboratory

Introduction

Lawrence Livermore National Laboratory (LLNL) is a secure government-owned and contractor-operated (GOCO) national laboratory in which public access is strictly controlled. It is owned by the Department of Energy, National Nuclear Security Administration (DOE/NNSA). The University of California managed the site for fifty-five years, from its inception to 2007. In 2007, the Lawrence Livermore National Security, LLC (LLNS) was selected by DOE/NNSA to manage LLNL.

Since the end of the Cold War, the mission emphasis of the laboratory has undergone several changes. Since 2005, LLNL's mission is comprised of three areas:

- Nuclear Security, which includes stockpile stewardship, nuclear non-proliferation work and prevention of nuclear terrorism;
- International and Domestic Security, which includes counter terrorism and other threat reduction capabilities, as well as military technologies; and,
- Energy and Environmental Security, which includes climate change studies and the pursuit of technologies to enable a carbon-free energy future.

Identifying Historic Properties

In 2005, Michael Anne Sullivan and Rebecca Ann Ullrich completed the *Historic Context and Building Assessment for the Lawrence Livermore National Laboratory* (2007). This document was prepared to support DOE/NNSA compliance with Sections 106 and 110 of the National Historic Preservation Act. The final recommendations of the assessment were that LLNL has five individual historic buildings, two sets of historic objects, and two historic districts eligible for the National Register of Historic Places (NRHP). Table 1 shows the criterion under which the properties were determined to be eligible.

The *Historic Context and Building Assessment for the Lawrence Livermore National Laboratory* (2007) can be found at https://enviroinfo.llnl.gov/content/assets/docs/culture/HistoricContextReport.pdf.

Building 865A, north and east elevations, 2001.

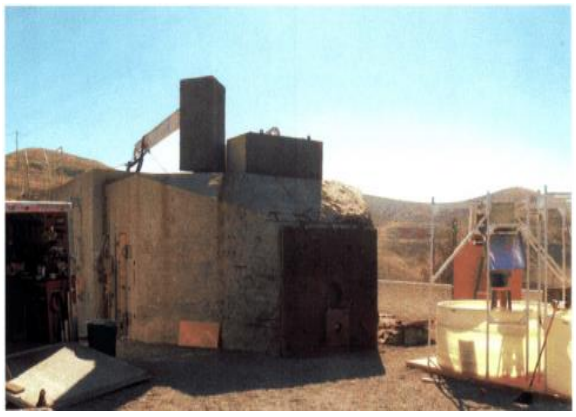
Protecting Historic Properties

As noted above, five buildings, two districts, and selected objects were recommended by DOE to be eligible for the NRHP. The California State Historic Preservation Officer and the Advisory Council on Historic Preservation concurred with these recommendations and a Programmatic Agreement was drafted and submitted by DOE to articulate the management of these properties and ongoing assessment activities.

The B280 LPTR reactor vessel, pictured here in 2003, has been proposed for decommissioning.

Since the original PA draft, minor comments and feedback were received, and it was very challenging to get SHPO to focus on finalizing the PA. In 2014, the new SHPO communicated that they were no longer interested in pursuing the programmatic agreement and requested project-specific compliance with Section 106 of the NHPA. Consultations were initiated in 2014 and 2015 to address mitigations for potential adverse effects, as described below.

Preservation via recordation was completed for each of the NRHP eligible properties to mitigate potential impacts from DOE's need to refurbish facilities, replace outdated programmatic equipment, update security equipment, and to provide employees with modern services and safety requirements.



The Firing Facility at B851A was engaged in hydrodynamic testing of non-fissionable nuclear weapons components and devices in support of the LLNL weapons program during the Cold War.

In accordance with Section 111 of the NHPA, recordation has been prepared in the form of a Historic American Building Survey (HABS) and/or a Historic American Engineering Record (HAER). These have included Building (B) 858, the Advanced Test Accelerator; B391, the Nova Facility; B332, The Plutonium Facility; B850 and B851A; the Hydrodynamic Test Facilities District; and the Process and Chemistry Area Historic District; as well as for the proposed decommissioning of B280, and for equipment and building upgrades and remodels in the Livermore Pool-Type Reactor.

Using Historic Properties

Facilities and equipment continue to evolve to carry out the mission of the DOE/NNSA. DOE and LLNL comply with and will continue to comply with Section 106 of the NHPA. In addition, LLNL has a well-developed process for pre-reviewing any excavations and building modification plans to assess adverse impacts to cultural resources and implement any necessary mitigation, including National Environmental Policy Act (NEPA) evaluations, as necessary. These processes include public outreach when required to solicit public interest with the public or other agencies.

Successes, Opportunities and Challenges

Completion of mitigation in the form of HABS and/or HAER documentation for all eligible properties has been identified as a major success for LLNL's management of cultural resources. However, the processes by which draft HABS and/or HAER documentation are submitted to the National Park Service for review and approval have been identified as challenges (i.e., lengthy review times, staff turnover, and changing submittal requirements).

Previously documented successes have also included the completion of an interactive history of LLNL, which is available to the public on the external website at https://www.llnl.gov/about/history. A companion document of six decades of photographs was published by the Regents of the University of California in 2007, it is entitled *Lawrence Livermore National Laboratory and the University of California, Making History…Making a Difference*.

Opportunities for continued documentation and preservation of historic resources at LLNL include a second periodic NRHP re-evaluation to be conducted in accordance with Section 110 of NHPA during the next site wide NEPA review, which has recently been initiated. If, during this re-evaluation, additional facilities are determined to be eligible properties, DOE and LLNL will continue to negotiate appropriate mitigation actions for protected properties with the California SHPO and ACHP.

Table 1- Current Status of Properties Considered NRHP-Eligible

Building or District	Year Built	Description	Criterion	Current Status	NRHP Eligibility
Building 194	1958	100-MeV Electron-Positron Linear Accelerator Facility	A and C	Active research facility. Preservation via HABS/HAER documentation is complete.	No longer NRHP Eligible
Building 280	1958	Livermore Pool-Type Reactor	A	Proposed for decommissioning. HAER documentation completed as mitigation.	No longer NRHP Eligible
Building 332	1961	Plutonium Facility	A and C	Active research facility. HABS documentation completed as mitigation for upgrades and	No longer NRHP Eligible
Building 391	1976	Nova Facility	A and C	Active research facility. HAER documentation completed as mitigation for upgrades and remodels.	No longer NRHP Eligible
Building 865A	1980	Advanced Test Accelerator	A and C	Proposed for decommissioning. HAER documentation completed as mitigation.	No longer NRHP Eligible
Building 174 Objects	1974	Janus laser and control panel	A and C	Active research facility. Objects were reevaluated and no longer retain integrity as potentially historic objects. Photographic documentation and context information are	No longer NRHP Eligible
Site 300 Process Area and Chemistry Area Historic District	1957	Process Area and Chemistry Area: Buildings 805, 806A, 806B, 807, 810A, 817A, 817B, 817F, 825, 826, 827A, 827C	A	Most buildings in active use. HAER documentation completed as mitigation for upgrades and remodels.	No longer NRHP Eligible
Site 300 Hydrodynamic Test Facilities	1955	Hydrodynamic Test Facilities Area: Buildings 850 and 851A	A	HAER documentation completed as mitigation for upgrades and remodels to B851 and decommissioning of B850.	No longer NRHP Eligible

Los Alamos National Laboratory

Introduction

The Department of Energy, National Nuclear Security Administration, Los Alamos Field Office (NA-LA) owns Los Alamos National Laboratory (LANL or laboratory). Triad National Security, LLC (Triad), is the Management and Operating (or M&O) contractor at LANL. The DOE/Environmental Management maintains a field office (EM-LA) at LANL, which is responsible for cleanup of legacy waste at the laboratory. The U.S. Army established the laboratory in 1943 to develop the world's first atomic weapons as part of the top-secret Manhattan Project. The laboratory is located in northern New Mexico on approximately 40 square miles of land on the eastern flank of the Jemez Mountains along the Pajarito Plateau (Figure 1). The Bandelier National Monument, Santa Fe National Forest, Pueblo de San Ildefonso, and communities of White Rock and Los Alamos border the laboratory. More than 12,000 people work at LANL within numerous facilities located in 49 designated technical areas (TAs). For more than 75 years, LANL has developed scientific and technological advancements in the areas of nuclear weapons development, nuclear stockpile stewardship, alternative energy research, high-speed computing, medical and human genome research, and world-class science. In compliance with federal law, environmental and cultural staff review and monitor the laboratory's varied activities in order to protect the diverse natural environment and rich historical setting.

Figure 1: Overview of the Pajarito Plateau, Los Alamos, New Mexico.

The laboratory provides cultural resources specialists who meet the qualifications set forth in the *Secretary of the Interior's Professional Qualification Standards* and others who work under the supervision of qualified individuals. In consultation with the New Mexico State Historic Preservation Officer and the Advisory Council on Historic Preservation, NA-LA established streamlined Section 106 procedures for compliance with the National Historic Preservation Act of 1966, as amended through the *Programmatic Agreement among the U.S. Department of Energy, National Nuclear Security Administration, Los Alamos Field Office, the New Mexico State Historic Preservation Office and the Advisory Council on Historic Preservation Concerning Management of the Historic Properties of Los Alamos National Laboratory, Los Alamos, New Mexico*. Staff also follow *A Plan for the Management of the Cultural Heritage at Los Alamos National Laboratory, New Mexico*, which provides an overview of the cultural resources program at LANL and establishes a set of procedures for effective compliance with historic preservation laws specific to the cultural heritage at the laboratory.

Prior to this reporting period, nearly 90 percent of laboratory property had been subject to intensive cultural resources surveys to identify historic properties. There were nearly 1,900 identified archaeological sites at LANL, with the great majority of these representing the villages, farmsteads, resource exploitation areas, rock art panels, trails, and shrines of more than 11,500 years of Native American use of the Pajarito Plateau, knowledge of which is still actively preserved in the living memory of modern Pueblo neighbors and other nearby American Indian Tribes. The other archaeological sites at LANL represent the remains of homes, wagon roads, trails, trash scatters, fences, and fields of early twentieth-century Hispanic and Anglo homesteaders. The built environment includes more than 400 facilities that represent locations where significant research and development activities took place—beginning with the Manhattan Project in 1943 and continuing through the end of the Cold War in 1990—that helped to define the recent history of the United States and many aspects of the modern technological world.

Identifying Historic Properties

Cultural resources management activities continued to be performed at the laboratory during the current reporting period in compliance with the NHPA and the PA. Cultural resources staff integrated cultural resource concerns/reviews into program and project planning in order to protect significant cultural resources and to avoid unnecessary delays, conflicts, and costs for its undertakings. In compliance with Section 106 of the NHPA and the PA, cultural resource staff assessed proposed laboratory projects that ranged in size and complexity, from routine to specific activities. During each of the reporting years, more than 900 proposed undertakings were reviewed. Cultural resources staff reviewed all areas of potential effect for each of these projects—first for accuracy of the location of the project area and then for potential impacts to historic properties. The reviews included a thorough analysis utilizing geospatial data for historic properties and unevaluated resources, which staff manages internally on geographic-information-system platforms developed by Esri and LANL's Infrastructure Program Office. These data are shared with the SHPO and the Pueblo de San Ildefonso (and other affiliated Native American groups when requested). The identification and management of historic properties, as stipulated in Section 110 of the NHPA, has also continued to be a programmatic priority.

During the current reporting period, cultural resources staff surveyed approximately 111 acres of previously unsurveyed LANL lands for cultural resources and evaluated 86 archaeological sites and 15 buildings and structures. These efforts are similar to the prior reporting period and bring the total survey coverage for LANL just above 90 percent. The laboratory manages 1,896 archaeological sites, of which 970 have been evaluated for listing in the National Register of Historic Places (Register), and 820 have been determined eligible or potentially eligible for listing. They also manage 415 buildings and structures, of which 325 have been evaluated for listing in the Register, and 181 have been determined eligible or potentially eligible for listing.

The laboratory actively promoted awareness and identification of historic properties through existing agency policies, procedures, and guidelines, which were extremely effective. During the current reporting period, approximately 35 percent of the newly identified historic properties were identified in the context of Section 106 activities, while approximately 65 percent of them were identified during other planning activities. Cultural resources staff continued to give presentations and tours that focused on cultural resource compliance, awareness and identification of historic properties, and historic preservation activities at LANL. Staff supported and/or participated in the laboratory's internal Worker Environmental, Safety and Security Team (WESST) Fest; Expanding Your Horizons (Science-Technology-Engineering-Mathematics [STEM] education outreach workshops primarily targeted for girls); and STEM outreach days at the Pueblo of Santa Clara, at the Pueblo de San Ildefonso, and for Earth Day. Cultural resources staff gave presentations focused on the laboratory's cultural resources to a variety of audiences including LANL employees, Southwest Seminars, the Office of Archaeological Studies, the Museum of Indian Arts and Culture/Center for

New Mexico Archaeology, the Santa Fe Archaeological Society, the Spokane Archaeological Society, Gonzaga University, the Albuquerque Archaeological Society, and the Society for American Archaeology. Notable presentations included one provided to SHPO staff and another presented to attendees of a conference focused on Preserving U.S. Military Heritage: World War II to the Cold War. Staff also led Science-on-Tap, a series of discussions conducted each month and hosted by the Los Alamos Historical Society, the Pajarito Environmental Education Center, and LANL's Bradbury Science Museum. Cultural resources staff conducted built-environment and archaeological site tours to various public, professional, and government groups, including Lisa E. Gordon-Hagerty, the Under Secretary of Energy for Nuclear Security and Administrator of the National Nuclear Security Administration, and her staff; LANL Legacy Management staff; members of the LANL Student Association; the Governor of the Pueblo de San Ildefonso and his staff; participants of the Pueblo de San Ildefonso summer youth program; National Park Service staff; and Congressional staff. Staff also supported media requests during the current reporting period. Cultural staff also organized a regional ceramics workshop for LANL and adjacent federal agencies in northern New Mexico to train and learn about ceramic types, identification, and analysis.

The laboratory has maintained an amicable and respectful relationship with its Native American neighbors. NA-LA and EM-LA consulted with neighboring Pueblos on the identification, management, treatment, and protection of archaeological sites, traditional cultural properties, in compliance with NHPA; the National Environmental Policy Act of 1969, as amended; the American Indian Religious Freedom Act of 1978; the Archaeological Resources Protection Act of 1979, as amended; the Native American Graves Protection and Repatriation Act of 1990; and other federal regulations, guidelines, Executive Orders, and Memoranda. This partnership also included the sharing of LANL cultural geospatial data with the Pueblo de San Ildefonso by request. The laboratory has continued to participate and support Triad-specific Technical Environmental Meetings and DOE-specific Accord Technical Environmental Meetings.

Protecting Historic Properties

Figure 2: The Pond Cabin at Technical Area 18 (Pajarito Site).

NA-LA and cultural resources staff continued surveillance and maintenance monitoring during the current reporting period of LANL's most significant Manhattan Project and Cold War buildings and structures, listed as "Candidates for Preservation." Since the last reporting period, cultural resources staff added 10 more facilities to the list, bringing the current total to 47. The Candidates for Preservation Program is described in the CRMP and includes 17 Manhattan Project National Historical Park (Park) and Park-eligible properties that were identified in the Park's enabling legislation. Rehabilitation work on these facilities has been ongoing, and key accomplishments included the stabilization of Pond Cabin (Figure 2); restoration of the windows and doors of the Slotin Building (TA-18-1); concrete stabilization, repair, and restoration of two Battleship Bunkers

(TA-18-2 and TA-18-5); vegetation removal from the Concrete Bowl (TA-6-37); and the removal of a degraded concrete cap that was installed in 2012 at Gun Site. Other urgent stabilization work is scheduled to be conducted during fiscal year 2020 and includes stabilization of the concrete stem wall at V-Site and repairs to the roof drainage systems at the two remaining V-Site buildings (TA-16-516 and TA-16-517). Rehabilitation work at the Quonset Hut (TA-22-1) included the urgent installation of a new sealant coating over the entire metal structure, temporary sealing of the windows with Plexiglas, and a reinstallation of the World War II era lightning protection system (poles and wires).

Cultural resources staff also conducted field monitoring of significant cultural resources most vulnerable to impacts from vandalism, natural erosion or decay, and laboratory activities. Following the Cerro Grande Fire Sites Rehabilitation Project (2012) and the Las Conchas Fire Flooding Monitoring Project (2012 and 2013), staff continued to support fuels (vegetation) mitigation projects to prevent future damage to historic properties from wildfires. Cultural resources staff also completed a number of rehabilitation projects in accordance with LANL's site monitoring and protection plan that included the installation of soil-erosion-control measures around historic properties. The distribution of responsibilities to federal site employees, contractors, and applicants for compliance with NHPA did not substantially change during the current reporting period.

Cultural resources staff have also employed strategies for adaptive reuse for facilities across LANL. In accordance with Section 110 of the NHPA, cultural resources staff developed other uses for historically significant, uncontaminated properties as an alternative to demolition to the maximum extent possible. Alternate uses included office space, storage, and interpretative areas. One example of this effort is underway for the Quonset Hut (TA-22-1), a Park-eligible building where the high explosives components of the Fat Man atomic device were assembled. Restoration of the Quonset Hut to its original interior configuration would allow the building to serve as conference and office space for current employees, and it could serve as an important showpiece for Park visitors. The Candidates for Preservation Program is ongoing, and NA-LA and cultural resources staff may identify additional significant facilities as candidates. Additionally, cultural resources staff are developing a template for preservation plans that will define regular inspection and maintenance schedules, funding sources, property managers, and acceptable reuse functions for all candidates.

Significantly, cultural resources staff continued to support the interagency agreement between NA-LA and the National Park Service for preservation assistance of Park properties at LANL. Key accomplishments conducted under the agreement included the aforementioned work at Pond Cabin, the Battleship Bunkers, Gun Site, V-Site, and Concrete Bowl. In addition the NPS completed a Cultural Landscape Inventory of Technical Area 18 and began developing the Cultural Resource Landscape Report. Planning for the replacement of the Slotin Building roof is ongoing and work should begin in the spring of 2021.

Cultural resources staff continued to routinely meet with their professional peers (e.g., Bandelier National Monument and regional U.S. Forest Service archaeologists) several times each year as part of a subgroup of the East Jemez Resource Council, a regional organization with the goal of maintaining and enhancing the natural and cultural resources of the East Jemez Mountains.

During the current reporting period, the laboratory identified, managed, and protected historic properties under the PA and CRMP. LANL has operated under programmatic agreements since 2000 and cultural resource management plans since 2006. The use of the streamlined processes outlined in the PA have been very effective in reducing time and costs for Section 106 review responsibilities. A measurement of effectiveness is the 25-percent increase in project reviews completed during the current reporting period as compared to the last reporting period.

Using Historic Properties

In July 2018, NA-LA and cultural resources staff in conjunction with the NPS held the first-ever public tours of the newly established Park within LANL boundaries (Figure 3). Cultural resources staff have continued to be active participants in Los Alamos community dialogues regarding the Park, and they continue to work closely with Los Alamos County historic preservation representatives and the Los Alamos Historical Society. During the current reporting period, staff provided Park presentations at public meetings, community lectures and events, university venues, professional conferences, and at Energy Community Alliance meetings. In 2019, NA-LA and cultural resources staff supported the updating of the LANL brochure, *History & Legacy of the Manhattan Project at Los Alamos National Laboratory*, which is provided during official tours and visits to LANL. Also in 2019, cultural resources

Figure 3: Visitors at Technical Area 18 during first-ever public tour of the newly established Manhattan Project National Historical Park within the laboratory boundaries.

staff and Bradbury Museum staff visited Bletchley Park in the United Kingdom to examine how another top-secret World War II facility interpreted their resources. Bletchley Park is open to the public and provides visitors with a revealing look into British codebreaking operations during World War II.

The laboratory continued to contribute to local communities through public-education efforts, including the development of outdoor informational panels, monuments, and kiosks. Staff installed trail kiosks in LANL Technical Areas 70 and 71 and an interpretative exhibit at Technical Area 49 (Figure 4), the laboratory's hazardous-materials training facility. The latter focused on the cultural and biological resources of the Pajarito Plateau and serves LANL employees and national visiting law enforcement, firefighters, and emergency management personnel enrolled in LANL's hazardous-materials training. NA-LA, DOE/Legacy Management, Triad, the County of Los Alamos, and the NPS developed interpretive panels for a planned trail near Point Weather in the Los Alamos town site that is going to be promoted as a Park hiking trail. Triad is currently preparing a second exhibit at

Technical Area 53, LANL's Los Alamos Neutron Science Center that will focus on the archaeology of the mesa on which this facility is located.

Figure 4: New biological and cultural resources exhibit at Technical Area 49.

Cultural resources management at LANL is part of a larger set of planning activities, which promotes the responsible use of the LANL built environment and landscape in support of DOE/National Nuclear Security Administration missions. Cultural resource staff ensured that the CRMP was integrated with all laboratory planning initiatives and activities, including LANL's Ten-Year Site Plan, the 2008 Site-Wide Environmental Impact Statement, LANL's Long-Term Strategy for Environmental Stewardship and Sustainability Plan, footprint reduction planning, and other facility-specific strategic plans. One factor that influences the decision-making on the continued use, reuse, or disposition of historic properties is contamination. LANL has been a nuclear research facility for 75 years, and contamination from operations is a factor affecting decisions about historic properties. Due to the nature of the work done at the laboratory, NA-LA did not lease or exchange historic properties during the current reporting period.

Successes, Opportunities and Challenges

The Candidates for Preservation Program has been very successful. NA-LA and cultural resources staff continued to coordinate with laboratory maintenance staff to maintain the 47 facilities for long-term preservation. This process ensured that cultural resources staff visit each facility on a quarterly basis to identify any maintenance needs and to coordinate maintenance and repair activities. The situation at V-Site is a good example of the efficacy of this program. V-Site is where both the implosion and gun atomic weapons were tested and the location where the high-explosive components of the Trinity device were assembled. Cultural resources staff identified maintenance issues at V-Site and completed an extensive restoration project in 2007 that included reconstruction of the wood-framed retaining wall that supported the earthen berm behind two buildings (TA-16-516 and TA-16-517). Cultural resources staff continued to visit the V-Site buildings regularly, as candidates for long-term preservation projects. During one of these visits, staff discovered that the earthen berm had settled, causing water infiltration and a separation of the waterproofing fabric

from the berm. Upon the observation of these harmful issues, cultural resources staff subsequently scheduled and completed the necessary repairs (Figure 5).

Figure 5: Repaired retaining wall at V-Site.

National Energy Technology Laboratory

Introduction

The National Energy Technology Laboratory (NETL) facilitates the responsible and effective use of our Nation's extensive fossil resources. NETL is one of 17 laboratories in the Department of Energy's National Laboratory System and the only National Lab dedicated to fossil energy research. For more than a century, NETL and its predecessor labs have been at the forefront of technology development, consistently creating safe and environmentally sound technical solutions that satisfy the world's demand for affordable, abundant energy. Today, at state-of-the-art facilities in Pittsburgh (PA), Morgantown (WV), and Albany (OR), NETL analysts conduct in-depth energy studies, as researchers develop advanced energy technologies and accelerate their commercialization in the United States and around the world. As the only National Lab that is both government- owned and government -operated, NETL is uniquely positioned to cultivate strategic partnerships that accelerate the development of technology solutions. NETL's collaborations with industry, academia, and other government organizations supplement the laboratory's research and energy analysis portfolios. Through this strategic approach, NETL addresses our most compelling energy challenges, creating solutions for today and options for tomorrow.

The history of NETL's Pittsburgh site (58 acres) stretches back to 1910, when the newly created Bureau of Mines in the U.S. Department of the Interior opened the Pittsburgh Experiment Station in Bruceton, Pennsylvania, 12 miles south of Pittsburgh. The station's original purpose was to investigate mining methods that would lower the number of fatal explosions and fires in U.S. underground coal mines.

Much of the work carried out today at NETL-Pittsburgh focuses on process systems engineering, decision science, functional materials and environmental sciences. A tangible example of this is NETL's Analytical Lab, which conducts research on rare earth elements (REEs) to investigate the economic feasibility of recovering REEs from U.S. coal and coal byproducts. REEs are vitally important to the production of electronics, defense technology and other items used in everyday life.

At NETL-Pittsburgh's Computation Materials Engineering Lab, researchers explore the use of coal and coal byproducts to manufacture feedstock for carbon materials. These materials include lightweight carbon fiber composites, carbon additives for construction materials, battery and electrode materials and carbon nanomaterials. NETL-Pittsburgh is also advancing technologies to capture carbon dioxide and store it deep underground to reduce emissions and bolster production of U.S. oil.

At the conclusion World War II, interest in producing synthetic fuels soared. In fact, the original mission of NETL in Morgantown (132-acre site) centered on finding better methods of gasifying coal to produce synthesis gas. Through the years, NETL-Morgantown has continued to lead research that enables domestic coal, natural gas and oil to economically power homes, industries, businesses and transportation while protecting the environment and enhancing U.S. energy independence.

The recently created Reaction Analysis & Chemical Transformation or ReACT Laboratory stands out among the numerous projects and facilities at the Morgantown site. This facility supports NETL's energy conversion engineering work, offering researchers innovative tools to advance

the science of chemical reactions and energy conversion with the long-term goals of more efficient fuel use and lowering emissions.

NETL-Morgantown is also home to Joule 2.0, one of the fastest, largest and most energy-efficient supercomputers in the world. The high-performance system can perform more than 5 quadrillion calculations per second, allowing researchers to model energy technologies, simulate challenging phenomena and solve complex problems as they seek to make more efficient use of the nation's fossil fuel resources.

The heart of the NETL's research site in Albany, Oregon, is its cutting-edge metallurgy and materials research capabilities. Situated on 42 acres, NETL- Albany complex has specialized facilities for materials fabrication and performance testing of advanced high-temperature, corrosion-resistant structural ceramic composites and metal alloys.

NETL-Albany traces its origins to 1943 when President Franklin D. Roosevelt announced that the U.S. Bureau of Mines had selected Albany as the site for the new Northwest Electro-Development Laboratory. Today NETL-Albany is internationally recognized for its leadership in designing, developing and deploying advanced materials for use in energy applications and extreme service environments.

NETL-Albany has expanded its geoscience and geomaterials science capabilities to better understand and characterize engineered/natural systems related to fossil energy such as conventional and unconventional hydrocarbons both onshore and offshore, natural gas hydrates and geothermal systems. This includes the multifunctional High-Pressure Immersion and Reactive Transport Laboratory capable of performing geological studies at simulated depths up to 10,000 feet, providing an experimental basis for modeling various subsurface phenomena and processes.

Identifying Historic Properties

At NETL, the Section 106 requirements of the National Historic Preservation Act are integrated with the National Environmental Policy Act review process. NETL will consult with the respective State Historic Preservation Offices' of Pennsylvania, West Virginia and Oregon and the Advisory Council on Historic Preservation if proposed actions may adversely affect properties considered eligible for listing or listed on the National Register of Historic Places (NRHP) that may be sited on the three agency sites. The three sites do not frequently have many on site projects or proposed actions that require a comprehensive environmental review.

DOE career professionals of NETL interact with tribal nations and State Historic Preservation Offices in conducting environmental reviews to comply with the National Environmental Policy Act and the National Historic Preservation Act across the United States due to the nature of how research projects are awarded through cooperative agreements. The cooperative agreement is the mechanism that triggers the vast majority of cases when NETL begins the NEPA process and applying the guidelines of NHPA and NRHP. NETL releases funding opportunity announcements (FOA) to the public to competitively award research and development projects. Once projects are selected for award and a cooperative agreement is put in place, the NEPA compliance division is notified to begin the NEPA review process. Depending upon the objectives of the FOA, the type of research projects, large scale demonstration, location, field sites will determine how involved the cultural resources management issues will become. The awarded projects are conducted on external project sites other than the three NETL sites. A thorough NEPA review is conducted for the awarded project

to determine the impacts to cultural resources and historic properties of the proposed activities on the external project site, and a NEPA review is conducted to determine if the project will receive a Categorical Exclusion (CX), Environmental Assessment (EA) or Environmental Impact Statement (EIS). If the awarded project receives a NEPA determination of Environmental Assessment (EA) or Environmental Impact Statement (EIS), NETL will begin our consultation process with the respective federal agencies, state agencies and the tribal nations.

NETL projects may be sited in any state across the country, near or adjacent to tribal lands as determined by the selection process of funding opportunity announcements from DOE. These projects have ranged from small-scale research projects to large-scale demonstration projects. Since these projects are proposed by private parties seeking federal financial assistance rather than government-directed projects, NETL's consultation with American Indian Tribes is to provide them with opportunities to participate at various stages in the preparation of an environmental assessment or environmental impact statements to ensure the potential effects on cultural resources of significance to American Indian Tribes are properly assessed. However, individual Tribes may request government-to-government consultation with NETL for any of the FOA awarded projects. Also, private party interactions with Tribes can also be significant relative to the type of project and possible impacts to cultural resources.

Protecting Historic Properties

The following information illustrates some of the activities that NETL has taken to protect historic properties by following the statutes, regulations, executive orders, and federal policies that direct federal agencies to consult with Indian tribes including the NHPA.

1992 EA: The EA was completed by the Chesapeake Division Naval Facilities Engineering Command for construction of the Navy facility (Building B-42 and associated antennas) that was to be used by the Navy for the NMDSG Military Affiliate Radio Station (MARS). In association with the EA for construction of the B-42 Navy facility, Ecology and Environment, Inc. (1992) completed a Phase IA/B cultural resource investigation for the proposed relocation of the MARS facility. The investigation identified a stone foundation, a 20th-century cinderblock/concrete foundation, and a concrete pad within the northern portion of the NETL-Morgantown property during Phase I archaeological investigations. Subsurface testing of the parcel identified two clusters of historic artifacts: shovel tests produced non-diagnostic materials in one sampling area, and kitchen, household, and architectural materials that dated from the 19th century to modern times in a second area. The study concluded that the soil deposits lacked integrity and, therefore, the site was not eligible for nomination to the NRHP. To date, the site has not been listed formally with the West Virginia Division of Culture and History.

September, 2002: This EA addresses the potential environmental impacts of a proposed facilities improvement project at the Morgantown, WV site of the National Energy Technology Laboratory. This project comprises the demolition or sale of several pre-existing trailer-buildings, the construction of a three-story (48,000 sq. ft) (net useable) office building, the construction of a three-story parking garage, the purchase of an adjoining five-acre parcel of land, the construction of a replacement 9,200 sq. ft child-care building, with an associated 10,000 sq. ft playground, and a 16,000 sq. ft parking area and driveway, the construction of a 5000 sq. ft to 9000 sq. ft parking area on the site of the existing child-care facility, and the construction of a storm-water retention pond.

An initial field review for historic resources was completed in May 2002. Four resources possibly pre-dating 1955 were identified in the Area of Potential Effect (APE), including two dwellings and a garage on the five-acre parcel, and a residence with garage across the road from the five-acre parcel. Based upon the initial site review, a Phase I Archaeological Survey and Historic Resource Survey was performed in May 2002.

No previously recorded historic resources, or National Register of Historic Places – listed or – eligible properties are present within the APE. The SHPO for their concurrence reviewed the Phase I Archaeological Survey and Historic Resource Survey Report (Phase I Report). The SHPO determined that the "project will have no effect on any property eligible for or listed in the National Register of Historic Places. Therefore, no further consultation is necessary with this office".

A field view of the Area of Potential Effect was conducted in May 2002. The proposed construction areas within the existing boundaries have all been heavily disturbed. However, soil augering on the five-acre parcel showed relatively intact upland soils occurring in the vicinity of springs/seeps. In addition, vegetation in the current yard area suggests that a historic house site may have been present. Approximately two of the five acres are not severely sloped or disturbed, and required a Phase I survey. Based upon this initial site review, a Phase I Archaeological Survey and Historic Resource Survey were performed in May 2002. The Phase I survey included background research, a geomorphological reconnaissance, field-testing, which included 37 shovel test pits (STPs), analysis, and reporting. The Phase I investigation yielded no cultural material; therefore, the report concludes that no further investigation is necessary.

Tribal Consultation, 2013: Several American Indian Tribes were contacted regarding the Pacific Gas and Electric (PG&E) project that was given a NEPA determination that required an environmental assessment to be completed. More detailed information of the interactions with the various Tribes may be found within the associated final EA. DOE demonstrated its commitment to fulfill its government-to-government responsibilities to the Tribes and conducted consultations with the federally recognized tribes of California in a respectful and productive way. As a result of these steps, DOE established a clear path for continued engagement with the Tribes throughout the proposed project's NEPA review and project development.

Tribal notifications and communications were initiated for the (PG&E) Compressed Air Energy Storage (CAES) Testing Project, King Island, San Joaquin County, California for its proposed project to conduct pressure testing of a depleted gas field to confirm its geologic and engineering suitability for future use as the air storage reservoir for a compressed air energy storage (CAES) facility. Tribes requested additional information, a project site visit was arranged for Tribal representatives and Tribal monitoring agreements were implemented for the temporary power upgrade installations.

In 2014, DOE attended in-person consultation meetings with the Buena Vista Rancheria of Me-Wuk Indians and the Ione Band of Miwok Indians at their respective California offices. Also, a project site visit with the Ione Band of Miwok Indians and PG&E was conducted. As a direct result of the consultation process with the Tribes, DOE included conditions to safeguard cultural resources within the signed (May 2014) Finding of No Significant Impact (FONSI). DOE worked with the Tribes to complete an ethnographic study as agreed upon in the FONSI.

May, 2019: This EA for the Energy Conversion Technology Center(ECTC) in Morgantown, West

Virginia to construct and make operational an approximately 16,800-sq.ftsq.ft center, which would serve as a multi-use, high-pressure experimental combustion facility that would add unique capabilities not currently present at NETL or any other national laboratory. This facility would allow NETL to expand its study of critical combustion issues, perform concept testing and model validation, and would include turbomachinery and a materials laboratory.

The West Virginia Division of Culture and History – State Historic Preservation Office was notified of the ECTC project at the NETL-Morgantown. The Deputy State Historic Preservation Officer, West Virginia SHPO, responded and requested that the two previously identified archeological sites (identified as 46MG90 and 46MG91) undergo National Register evaluations prior to initiating construction activities. In addition, West Virginia SHPO requested that photographs be submitted for consideration of possible architectural resources, which may be eligible for inclusion in the NRHP. To comply with these requests, a Phase II Work Plan for site 46MG90 (the site where construction activities would occur) was completed and subsequently approved by West Virginia SHPO.

The Phase II archeological and historic documentation research investigations were completed. The archeological investigations for site 46MG90 encompassed an approximately 30- by 45-meter area on a knoll. Field investigation methods included the excavation of five 1- by 1-meter test units to focus on areas where artifacts were recovered during the Phase I survey. A total of 57 ceramic, glass, and metal artifacts were recovered as a result of the field investigation in this area. These artifacts were identified as historic domestic and architectural items dating from the mid-19th through the mid-20th century. A pedestrian reconnaissance was also conducted over the area where a concrete and cinderblock foundation and concrete pad were identified during the Phase I survey. A single shovel test probe was excavated in this area, although no remains of either the foundation or concrete pad were observed. It is likely that these features were removed as part of the relocation of the MARS facility. The technical report documenting the results of the Phase II investigations was completed. Based on the results of the Phase II investigations, site 46MG90 was recommended in this report as not eligible for nomination to the NRHP. This report was provided to West Virginia SHPO; and West Virginia SHPO concurred with this recommendation in.

The West Virginia SHPO was also provided with the results of a viewshed analysis (including maps, photos, and detailed projects plans) to comply with their request to review the possible impacts of the proposed ECTC project on architectural resources. The recommendation from this viewshed analysis was that no historic-age buildings identified within the viewshed of the proposed project are eligible for listing on the NRHP. The West Virginia SHPO concurred with this recommendation in a letter to NETL, noting that the undertaking would have no effect on historic architectural resources.

There are no federally recognized American Indian Tribes located within the state of West Virginia. However, the Catawba Indian Nation; Osage Nation; and Delaware Nation, Oklahoma, were identified as the federally recognized American Indian Tribes with possible interests in Monongalia County, West Virginia (Tribal Directory Assistance Tool Version 3.0, HUD.GOV). Copies of the draft EA were sent to these Tribes for review and comment. In response, the Catawba Indian Nation provided a letter of concurrence to NETL. The letter stated "The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. However, the Catawba are to be notified if Native American artifacts and/or human

remains are located during the ground disturbance phase of this project."

Another letter of concurrence, from the Delaware Nation Historic Preservation Department, was received by NETL. The letter states "…the location of the proposed project does not endanger cultural, or religious sites of interest to the Delaware Nation. Please continue with the project as planned keeping in mind during construction should an archaeological site or artifacts inadvertently be uncovered, all construction and ground disturbing activities should immediately be halted until the appropriate state agencies, as well as this office, are notified (within 24 hours), and a proper archaeological assessment can be made."

Programmatic Agreement: NETL-Albany occupies a 47-acre site near the western boundary of the city. Starting in 1923, the property was the campus of Albany College, one of the earliest colleges in the region. During World War II the property was converted into a federal metallurgical research facility operated by the U.S. Bureau of Mines, and was the site of several important contributions to modern metallurgy. Due to the historic significance of these two points, in 1997 the property was evaluated by the Department of the Interior's Bureau of Reclamation and was consequently found to be eligible for the National Register of Historic Places, as a Historic District, by the Oregon State Historic Preservation Office.

The site was transferred to the Department of Energy in 1996 and placed under the jurisdiction of NETL in 2005, which continues to operate it today as a working research institution. Research brings with it the associated need for some flexibility in the type of spaces and laboratories required as projects evolve, are completed, and new projects are started. This need, and the ongoing demands of building maintenance, repair, and refurbishment on the campus have the potential at times to affect the preservation of the site's historic qualities. To facilitate and guide this process, NETL and the SHPO entered into a Programmatic Agreement in 2002. Currently, 26 out of the 36 buildings at the Albany Site are considered "contributing" to the Historic District and fall under the requirements of the PA

Using Historic Properties

The Albany Regional Museum in Albany currently has a museum exhibit highlighting the historic materials research, site history and buildings of NETL-Albany site. Also, the Albany site conducts site tours regularly to civic groups, congressional members, city and state government officials, local universities, and other federal agencies. The typical tour is 1 to 4 hours s in duration. The historical significance of the site, as well as the current research activities are discussed. Site tours are normally arranged through NETL's research organization and the Department of Energy's STEM (Science, Technology, Engineering & Mathematics) outreach program.

Successes, Opportunities and Challenges

NETL will continue to consult with tribal nations, the respective State Historic Preservation Offices and ACHP to comply with NEPA, NRHP and NHPA for future cooperative agreement projects that are sited at external site locations across the country. Also, NETL-Albany will continue to work with the Oregon State Historic Preservation Office under the existing programmatic agreement in maintaining and refurbishing the buildings and the landscape. The partnership with the Oregon SHPO and NETL has been very successful and will continue as agreed upon.

National Renewable Energy Laboratory

Introduction

The National Renewable Energy Laboratory (NREL) is the only national laboratory solely dedicated to advancing renewable energy and energy efficiency technologies from concept to commercial application. NREL's mission is to advance the science and engineering of energy efficiency, sustainable transportation, and renewable power technologies, and to provide the knowledge to integrate and optimize energy systems. The laboratory consists of two sites: the main 327-acre South Table Mountain campus (STM) in Golden, Colorado, and the 305-acre Flatirons Campus (FC) located between Boulder and Golden, Colorado. The operation of NREL is overseen by DOE's Golden Field Office.

The STM campus is located at the base of South Table Mountain and was formerly part of Camp George West, a Colorado Army National Guard facility that operated from 1902 until the 1960s. The site was established in 1902 by the Colorado National Guard and was then known as the State Rifle Range; it was later renamed to Camp George West in 1934. The site was used as a permanent training facility and supply staging area for local Colorado National Guard units. In 1977, the State of Colorado transferred the property to DOE to establish the Solar Energy Research Institute (SERI). SERI later achieved national laboratory status and was renamed NREL in 1991. Currently, the STM campus consists of multiple laboratory buildings, testing facilities, and support facilities dedicated to renewable energy and energy efficiency research and development in areas such as photovoltaic solar cells, concentrated solar power, biomass, biofuels, vehicles, geothermal, hydrogen and fuel cells, and energy systems integration.

The FC is located northwest and just outside the buffer zone of the former DOE Rocky Flats site, and the Rocky Flats National Wildlife Refuge borders the FC to the south and east. Since the mid-1970s, DOE has conducted wind energy research and development at the FC, which was first known as the Wind Energy Test Center, and was later renamed the National Wind Technology Center (NWTC). In 2019, the NWTC was renamed the FC to reflect its expanded mission, which includes water power and grid integration research in addition to serving as a wind energy technology research facility.

As a result of surveys at the STM campus, three historical structures were recognized as significant cultural resources that should be preserved, including an open-air amphitheater, a stone bridge spanning a natural drainage channel adjacent to the amphitheater, and a stone and concrete ammunition igloo below the amphitheater site (Figure 1). The structures were constructed during the 1930s Works Progress Administration era when the property was part of Camp George West. DOE and NREL successfully added the resources to the National Register of Historic Places in 1992, with the amphitheater and stone footbridge listed together as a single site. Neither of these resources are in use by DOE or NREL. In addition, there are no historic DOE-built buildings or structures over 50 years old or otherwise eligible for inclusion to the National Register of Historic Places located on either campus.

The Colorado Amphitheater is a stone structure with seats of concrete placed on stone bases, a concrete center aisle, and a stone projection booth (Figure 2). The stone used is the local volcanic rock which covers the top of South Table Mountain. The structure was built on the natural slope of the hill and is in a heavily deteriorated condition. The stone bridge spans a natural drainage channel adjacent to the amphitheater. It was constructed of the same materials and in the same manner as the amphitheater. The Ammunition Igloo is constructed with a stone façade made with two steps in the style of old western town buildings (Figure 3). The stone and method of construction are similar to that of the amphitheater. The amphitheater and stone bridge are culturally important in their association with Depression-era work projects, a significant period in the history of our nation. The

ammunition igloo's significance is an integral component in the operation and mission of Camp George West as it supported a small arms range and served as a munitions storage location.

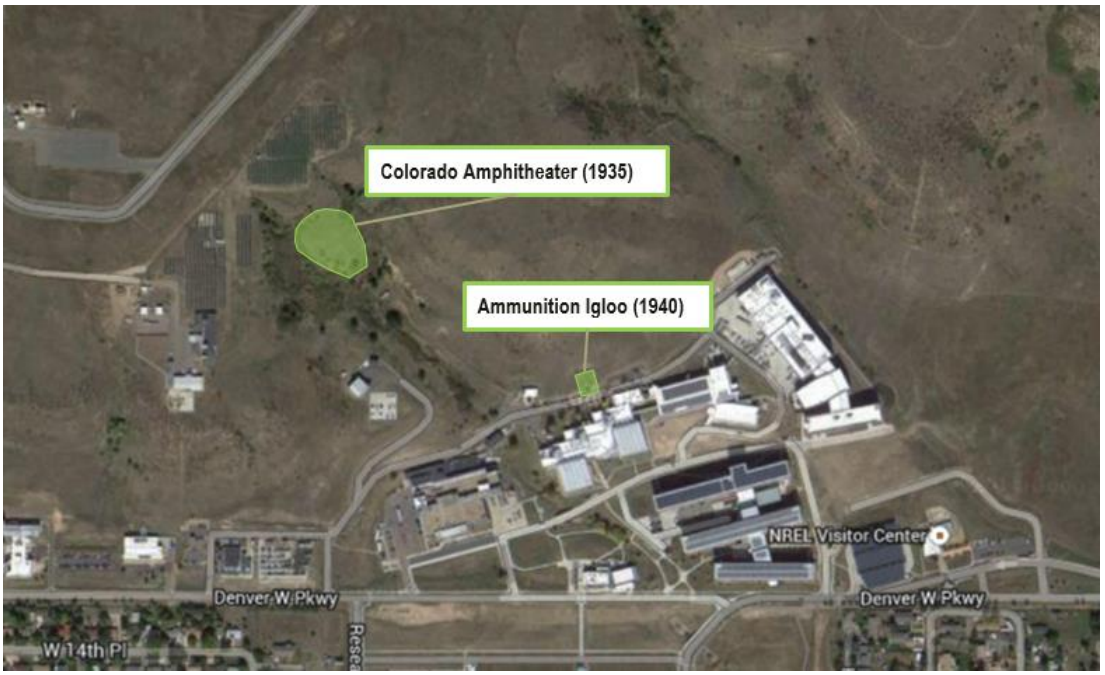


***Figure 1**: The locations of the Colorado Amphitheater and Ammunition Igloo on the STM campus.*

Figure 2: The Colorado Amphitheater.

***Figure 3**: The Ammunition Igloo.*

Cultural resources at the STM campus and FC are protected in several ways. The cultural resource program consists of procedures that are developed and implemented to manage historic features and to protect undiscovered cultural resources. The program is reviewed every three years to ensure that all procedures and processes are current and effective. The procedures are integrated into the project planning process to minimize and/or mitigate impacts to historic properties. During construction, contractors are required to provide workers with training to maintain an awareness of the possibility of unearthing archaeological or historic artifacts or other cultural resources and provide guidance on what to do in the event that such resources are discovered. In this event, workers are to stop all work in the vicinity until a qualified archaeologist evaluates the significance of the find; NREL has a contract with an archeology firm to evaluate the site if such a find is discovered.

In 2014, DOE completed Site-Wide Environmental Assessments for both the STM campus and the FC which analyzed the impacts of potential future projects over the next five to ten years at both sites. At the time the STM campus EA was drafted, there was an insufficient level of detail available about the location and design (such as footprint, infrastructure, architectural features, etc.) of potential future facilities to be located near the cultural resources to properly characterize whether effects would occur or not. The Colorado State Historic Preservation Officer concurred with DOE's determination that it meet its Section 106 obligations by initiating consultation on a project-by-project basis as individual activities are authorized. If a project has the potential to unearth cultural resources, additional surveys will be conducted. If a survey reveals artifacts, DOE and NREL staff will work with the Colorado SHPO to determine if the artifacts are eligible for consideration as cultural or historic resources. Because there are no eligible historic properties at the FC, the FC EA analyzed indirect visual impacts to offsite historic properties in the Section 106 consultation process. The Colorado SHPO concurred with DOE's determination that the range of future activities at the FC will result in no adverse effect to offsite historic properties.

Site planning documents for the STM campus were designed to protect its historical sites by incorporating them in a non-developable 11-acre zone to prevent direct impacts to these resources. Indirect impacts, such as visual effects, to these features and nearby offsite historic properties from campus development activities and routine operations are considered and analyzed in NEPA documents in concert with Section 106 consultations with the Colorado SHPO and other consulting parties. Lastly, half of the STM campus (approximately 177 acres) is preserved in a conservation easement where construction activities are prohibited, with the exception of existing utility easements and trail maintenance. The purpose of the conservation easement is to preserve the natural character of the property, including its natural, scenic, ecological, and historical aspects.

Identifying Historic Properties

Surveys have been completed for 100% of both the STM campus and the FC. The surveys were conducted for site characterization purposes and were not performed in partnership with the Colorado SHPO or consulting parties. Because the sites have both been fully surveyed, no further efforts to identify cultural resources have been performed, and changes to the identification methods used for such work have not changed over the last three years.

Protecting Historic Properties

An internal assessment of the cultural resource program was performed in 2017 which resulted in revisions to the program. First, the operating procedure for the program was updated to clearly state the roles and responsibilities of DOE and NREL during the NEPA process on projects that may impact cultural resources. Second, the cultural resource program was linked with other relevant programs, such as Construction Quality Assurance, to integrate cultural resource management in construction activities. Lastly, projects that include onsite excavation are identified as activities that can potentially impact cultural resources, and NREL project managers have a responsibility to provide this information to the NEPA team to support the NEPA review. Together, these revisions helped strengthen the cultural resource program by integrating cultural resource management into relevant programs and ensuring roles and responsibilities are clearly stated.

Using Historic Properties

The Colorado Amphitheater and Ammunition Igloo are located on a secure campus. While they do not contribute to the local economy, they do contribute to the local community as they are both visible to the public from the trails on the conservation easement which contributes to the natural setting of the site and surrounding area. Both resources are accessible to the public by prior arrangement with NREL. In addition, NREL holds regular tours of the STM campus which are open to the public, and the history of the campus, including the resources, are highlighted. The contribution of these resources to the local community has not changed over the last three years. Neither of these resources are in use by DOE or NREL, and they have not been leased or exchanged to others.

Successes, Opportunities and Challenges

Two major projects were either completed or started over the past three years that involved the protection of cultural resources.

In 2018, a project to install a 115-kV transmission line that included a substation and switching station was proposed at the FC. The line would be located both and off of the FC, would be approximately 1.3 miles long, and would tap into an existing electrical line. The area of potential

effects for the line was approximately 28.11 acres wide along the transmission line corridor (1.3 miles long and 150 feet wide). No cultural resources were identified on the FC. Cultural resources identified off the FC via a records search included a segment of the Denver, Utah, and Pacific (DU&P) railroad and a Colorado Centennial Ranch. In addition to records searches, three field surveys were performed by an archeologist. A second segment of the DU&P was discovered and described during the field surveys. All cultural resources were evaluated and determined to not be eligible for listing in the National Register of Historic Places. As a result, DOE concluded "no historic property affects", and the Colorado SHPO concurred with this determination. The project was completed in 2020 and no cultural resources were discovered during construction. This project serves as an example of the successful implementation of the cultural resource protection program, and illustrates the detailed efforts that are taken to ensure the protection of cultural resources.

In 2020, a project was proposed to construct a new research facility at the STM campus. To support the planning effort for the project, the cultural resources program lead provided wording for "right of discovery" requirements to the project team. The requirements were incorporated in project documents to make bidding firms aware of their responsibility to immediately notify DOE and NREL if they unearth resources during construction. In addition, the project team was notified that the proposed location of the facility would be in the view shed of the Colorado Amphitheater and consultation with the Colorado SHPO will be required once project details are known. This early coordination provided a valuable opportunity to ensure the protection of cultural resources by incorporating those requirements in project planning documents upfront, and will help protect cultural resources throughout the course of the project.

Nevada National Security Site

Introduction

The Nevada National Security Site (NNSS) played a crucial role in the United States' nuclear testing program during the Cold War with the former Soviet Union. The escalating arms race for nuclear weapons superiority led to numerous nuclear explosions carried out worldwide by the United States, the Soviet Union, and other foreign powers. During the Cold War, 100 atmospheric and 828 underground nuclear tests were conducted at the NNSS. Other experimental activities occurred at the site including research and development of nuclear-powered rockets and missiles, dosimetry, spent fuel storage, and an experimental farm to investigate the potential transport of radioactive materials through the food chain. Even after testing ended in 1992, the NNSS remained an active facility. Presently, the major missions of the NNSS include Stockpile Stewardship, National Weapons Science, Global and Homeland Security Programs, and Environmental Management.

Administered by the Department of Energy's National Nuclear Security Administration Nevada Field Office (NNSA/NFO), the NNSS covers 1,360 square miles and includes portions of the Great Basin and Mojave Desert ecosystems. Restricted access to the site has preserved many cultural resources that reflect a long period of human use extending back 13,000 years into the prehistoric past and continuing through the mining and ranching period of the early twentieth century, after which the land was withdrawn for federal use in 1951.

Since its inception in the 1970s, the NNSS Cultural Resources Management Program has served to fulfill the NNSA/NFO's compliance responsibilities to identify and protect historic properties on the NNSS as guided by federal laws, regulations, executive orders, and DOE policies. Most of these efforts have been driven by the Section 106 requirements of the National Historic Preservation Act that the NNSA/NFO must consider the effects of its undertakings on historic properties. Although only nine percent of the NNSS has been inventoried, the NNSS CRMP has documented more than 2,650 prehistoric and historic archaeological sites and more than 750 buildings, structures, and landscapes associated with the built environment.

Furthermore, over the past 25 years, at least 15 historic districts have been established on the NNSS. Five districts are associated with atmospheric nuclear tests: Frenchman Flat, Apple-2, Smoky, Shasta, and Yucca Lake. Six districts are associated with underground nuclear tests: U12b, U12e, U12n, U12t, U16a, and U15a/e. Three districts are associated with nuclear research programs: Bare Reactor Experiment Nevada (BREN) Tower Complex, Pluto Control Facility, and the Test Cell C Complex. Finally, there is the Mercury Historic District, which served as the main base camp for the NNSS. The townsite of Mercury is nationally significant for its importance in supporting nuclear testing and scientific research from 1951 to 1992 during the Cold War era.

In addition to meeting its compliance responsibilities, the NNSA/NFO also supports heritage tourism and community involvement through outreach and fosters STEM (science, technology, engineering, and mathematics) education for students in Nevada. Exhibits at the National Atomic Testing Museum (NATM), which is funded in part by the NNSA/NFO, educate members of the public about nuclear testing and resources on the NNSS. Citizens often visit the site on guided tours that highlight nuclear testing locations such as Frenchman Flat and other historic features such as Sedan Crater and the Apple houses.

Identifying Historic Properties

During the current reporting period, the methods used by the NNSA/NFO to identify historic properties have been refined and formalized through the completion of the NNSS CRMP's *Field Procedures Manual for the Nevada National Security Site*. This manual provides procedures to streamline standard identification measures so that efforts can be concentrated to areas with known cultural resources. It is now possible to anticipate many of the resource types that will be encountered in the field, which greatly improves efficiencies in field recordation. Within the reporting period, almost 3,000 acres were inventoried, which represents an increase of little more than four percent in the acreage inventoried since the 2017 reporting period. An additional 177 historic properties have been documented.

To locate historic properties and predict the likely location of potential properties, the NNSS CRMP relies on a GIS database that holds comprehensive records of archaeological and architectural inventory areas and known historic properties, historic districts, and unrecorded Cold War resources on the NNSS. The NNSS CRMP uses this database to access, update, analyze, and manage historic properties. Researchers also have access to the SHPO's NVCRIS database. For built-environment resources, the Facility Information Management System (FIMS) is updated frequently as properties are recorded and evaluated for eligibility to the NRHP.

Geospatial information about historic properties is most useful and referenced extensively prior to fieldwork when researchers conduct archival reviews to determine the types of cultural resources likely to be present within the area of potential effects (APE) for any proposed undertaking. In the past three years, specific improvements to the database include merging data layers created over many years and setting up relational database tables that help researchers in identify resources within a project area and understand those resources within a broader context. Additional work has been done on the convergence, or unification, of the data maintained in the GIS database with the records held by the SHPO. This facilitates the consultation and reporting process by maintaining data that match SHPO requirements. The GIS database, in conjunction with paper records, allows the NNSS CRMP to anticipate many of the cultural resources encountered in the field, which greatly improves fieldwork efficiency.

The NNSA/NFO consults with the Nevada Test Site Historical Foundation regarding NNSS historic preservation issues for the Cold War built environment. This foundation is the parent organization of the NATM, a popular museum in Las Vegas and an affiliate of the Smithsonian Institution. The NATM has also been designated a national museum by Congress. Besides exhibits that educate the public on nuclear testing conducted at the NNSS, the NATM also showcases exhibits about the prehistory and ethnohistory of the original inhabitants of the NNSS and the historic ranching and mining that occurred there before the land was withdrawn for federal use in 1951.

The NNSA/NFO sponsors the Nuclear Testing Archive (NTA) Public Reading Room at the NATM, which makes documents available to researchers, students, and the interested public. To further educate members of the public about the missions and programs at the NNSS, the NNSA/NFO has produced almost 100 fact sheets. These fact sheets provide pertinent information regarding activities on the NNSS, including the history of the site, and address a variety of topics, from current mission and environmental management issues to the historical backgrounds of facilities on the

NNSS. Fact sheets are available in the reading room and online at https://www.nnss.gov/pages/resources/library/FactSheets.html.

Thousands of people have visited the NNSS on tours hosted by the NNSA/NFO. Tours are offered monthly and are often booked up to a year in advance. The tours highlight historic properties such as the town of Mercury, which was the main base camp for the NNSS; Frenchman Flat, where the first atmospheric nuclear test, Able, occurred in January 1951; News Nob, where journalists and visiting dignitaries observed atmospheric tests; the Apple-2 Houses, which replicated a typical American community complete with mannequins to study the effects of a nuclear blast; and Sedan Crater, which is listed in the NRHP. Sedan Crater resulted from an experiment conducted as part of the Plowshare Program that explored peaceful uses of nuclear explosives. Education and preservation of these valuable resources are shared during each tour and visitors leave with a greater understanding of the importance of the NNSS to our nation's history.

Because of its nationally significant record of nuclear testing during the Cold War, the NNSS continues to pose complex challenges for cultural resources and historic preservation. Because the majority of its buildings, structures, and accessory elements are associated with particular events or individual nuclear tests and are therefore most likely historic properties, the frequency and demand for Section 106 evaluations is ever increasing. New NNSS projects propose to use areas within old testing locales and require modernization of historic buildings and structures to meet mission needs. In an attempt to allocate more time for Section 110 efforts, the NNSA/NFO is developing PAs that seek to streamline Section 106 and exempt routine maintenance activities. Whenever possible, funds must be allocated to record significant resources

Additionally, efforts by the U.S. Department of Energy's Environmental Management Nevada Program (EM NV) have resulted in greater interest and involvement in the NNSS Cold War historic legacy. Established in 1989, EM was formed to address the nation's Cold War environment. The EM NV program provides citizen involvement and feedback on NNSS EM NV activities, including corrective actions for legacy buildings, through the Nevada Site Specific Advisory Board (NSSAB).

The NTA collects and consolidates historical documents, records, and data dealing with radioactive fallout from U.S. testing of nuclear devices for long-term preservation. The NTA serves as the official repository for historical evaluations and mitigation documentation for legacy Cold War resources produced as part of the NNSS CRMP. Bibliographic information for items at the NTA may be accessed through https://www.osti.gov/opennet/. OpenNet is the Department of Energy's database containing declassified and publicly available documents. It is an automated searchable database, which enables

The NNSA/NFO shares the results of inventories, including reports and site forms, with the SHPO, who also maintains a database of geospatial data about the historic properties. Electronic files are submitted to the SHPO and include shape files for the sites. Because the NNSS is a secured facility that upholds a high level of national security, all geospatial data are kept confidential and not available to parties outside the agency. However, the results of some important studies that have been approved for public release and publication are made available. These reports are uploaded to the Department of Energy's Office of Scientific and Technical (OSTI) website at https://www.osti.gov. Numerous reports have been uploaded over the last three years, including the *Architecture of*

Mercury: Nevada's Boom Town and additional reports detailing resources in the Mercury Historic District, such as the Mercury Bowling Alley, and architectural surveys of the E-MAD Facility and the TTCHD.

Protecting Historic Properties

Over the past three years, the NNSS CRMP staff continued to implement projects to comply with cultural resource laws, regulations, executive orders, and directives; develop tools to better manage cultural resources, including updating current guidance manuals; and assess the effects of NNSS projects on historic properties. To ensure effective compliance, all CRMP staff meet the SOI Standards for historic preservation. The number of staff dedicated to the program has grown incrementally with the addition of two part-time employees and one on-call former employee to supplement continuing efforts to comply with Section 106 requirements while maintaining mission schedules. Most staff members are assigned several priority Section 106 projects. In addition, SOI-qualified personnel are available as needed to augment Section 106 efforts. Other individuals are also tasked with Section 110 projects, which may be postponed if mission needs change. To date, no staff member has been tasked with researching or assisting with Section 111 compliance.

The NNSS is a highly secured facility because of the sensitive nature of the various missions conducted at the site to maintain national security. Public access to historic properties on the NNSS is limited to guided tours only. Although the NNSA/NFO does not support a site stewardship program, the restricted access to the NNSS plays a critical role in protecting and preserving sites. Periodic monitoring of historic properties is a part of the NNSS CRMP. Tribal members participating in the AICP are escorted to sites they wish to visit and assist with site assessments.

The NNSA/NFO provides informational tools and resources to educate interested stakeholders and the next generation of Nevadans on the significant history and future of the NNSS. Some of the resources available include social media and a website (www.nnss.gov), open houses and community conversations, articles and fact sheets, educational demonstrations, and displays. Additionally, the NNSA/NFO collaborates with local and regional schools to introduce students to STEM-based career opportunities and to educate them about the ecosystems at the NNSS and the history of nuclear testing.

The EM NV also partners with tribal representatives in various ways and recognizes the American Indian Tribes as subject matter experts on the land. The EM NV has relied on tribal expertise to develop recommendations on how to revegetate specific areas of the NNSS. Younger tribal members are always encouraged to assist with monitoring the revegetation so that tribal ecological knowledge may be passed on to the next generation.

To address the complexities of the NNSS built environment and to streamline compliance while preserving important historic resources, the NNSS CRMP is working diligently with the SHPO, the ACHP, the Tribes, and other consulting parties to structure an NNSS site-specific PA. Currently, the Section 106 process is implemented on a project-by-project basis. This approach has the potential risk of leading to costly delays in mission schedules. This site-specific PA will tailor the Section 106 process to establish a balance between meeting the mission needs of the NNSS while better managing and protecting historic properties. The PA will:

- identify undertakings that require no further Section 106 review;
- identify property types that require no Section 106 identification or eligibility determinations;
- develop streamlined reporting and consultation protocols for undertakings with no adverse effects to historic properties; and
- allow for standardized mitigation options for historic properties in routine situations without requiring prior consultation and review.

The NNSS site-specific PA will facilitate time- and cost-effective assessments of the effects of each undertaking on historic properties and serve as a formal agreement between the NNSA/NFO, the SHPO, the ACHP, the Tribes, and other stakeholders regarding appropriate management practices to protect cultural resources on the NNSS.

In addition to developing the site-specific PA, the NNSS CRMP executed and implemented a PA for the geographic area encompassing the Mercury Historic District (hereafter referred to as the Mercury PA). This PA serves to resolve the adverse effects that result from modernization and operational maintenance efforts at the NNSS base at Mercury. The Mercury PA streamlines Section 106 procedures by exempting certain routine activities—such as maintenance, repair, and upgrades that have no potential to affect historic properties—and by stipulating standard treatment measures for specific categories of properties. In consultation with the SHPO, the NNSA/NFO ranked all resources in the Mercury Historic District into three categories. The Mercury PA stipulates standard treatment measures for these categories. Treatments range from documenting less distinctive resources with only SHPO updated Architectural Resource Assessment (ARA) forms and digital images to documenting unique resources with high-quality, large-format, black-and-white photographs; locating copies of historic facility architectural and engineering plans and drawings; and updating ARA forms. In some cases, only the best representative of a resource type was documented to serve as a sample of that resource type. This permitted the NNSA/NFO to avoid further recordation of similar resources.

Implementing the stipulations of the Mercury PA has saved the NNSA/NFO time by avoiding unnecessary recordation. In addition, the staff time needed to prepare reports has been reduced because mitigation documentation is standardized and is a substitute for the preparation of a full historic properties architectural survey report. The cost and time savings from using the Mercury PA are allotted to priority Section 106 projects and Section 110 efforts.

Using Historic Properties

The NNSS is a multi-mission, experimentation site that delivers technical and service solutions in partnership with national research laboratories to support national security missions. The NNSS has a significant economic impact in Nevada. The site employs more than 3,000 workers across six government agencies, 11 prime contractors, and three laboratories. Work is conducted seven days a week to ensure the security of the United States and its allies.

The NNSS provides funding and support for public education about the historic properties under its care. Approximately $1.3 million per year supports the lease and utilities at the NATM and more than $5 million is provided annually to DRI, which supports environmental monitoring, American Indian relations, revegetation studies, and the archeological monitoring of historic properties. The

EM NV is involved with building community through its participation in community organizations such as the NSSAB.

The NNSA/NFO supports heritage tourism and community involvement through its outreach efforts. Citizens are often introduced to historic properties on the NNSS during guided public tours of Cold War historic locations, such as the base camp of Mercury, Frenchman Flat, News Nob, and Sedan Crater (which is listed in the NRHP), and the Apple-2 Houses (which replicated a typical American community—complete with furnished one- and two-story homes, mannequins, automobiles and more—and were built to measure the effects of a nuclear test). These tours are quite popular and are often booked well in advance. The NNSA/NFO also offers special group and media tours. Members of the Tribes also visit the NNSS several times a year to view prehistoric and ethnohistoric sites and assist with current condition assessments.

The two key factors in agency decisions about disposing of or retaining historic properties are mission needs and environmental management. As a federal agency, the Department of Energy has been directed by Congress and the president to provide leadership in the preservation of cultural resources on lands under its jurisdiction and to manage them in a spirit of stewardship for future generations. Laws, executive orders, and regulations have been written to provide guidance on preserving and managing cultural resources, which focus on identifying the cultural resources on federal lands and preserving their historic and scientific values. Buildings and structures in use today, especially in the town of Mercury (which is also a historic district), require modernization and upgrades to their infrastructure (i.e., water, power, heating/cooling, etc.) to meet current and future mission needs. This sometimes requires demolition and/or replacement where maintenance and structural upgrades are not possible. To implement Section 106 compliance within the Mercury Historic District, the NNSA/NFO has executed the Mercury PA to resolve adverse effects from modernization activities.

From 1951 to 1992, the NNSS was the location of hundreds of nuclear tests and support operations that resulted in contamination at the site. The EM NV is tasked with remediating and managing these contaminated areas, which often include historic properties, through corrective actions to protect the public's health and the environment. Accomplishing these corrective actions is a priority for the EM NV. The Federal Facility Agreement and Consent Order (FFACO) agreed to by the State of Nevada, outlines the schedule for cleanup and monitoring commitments for any site contaminated by historic nuclear testing activities conducted by the Department of Energy and the U.S. Department of Defense. The FFACO's Corrective Action Strategy outlines the approach for identifying, prioritizing, investigating, and remediating sites on the NNSS. Corrective actions may range from taking no action to a clean closure, which requires the removal of all contamination from a site. Contaminated sites can include buildings, structures, and other features that may be historic properties, which poses a challenge. The reuse and/or retrofitting of contaminated buildings is not feasible.

For cases in which environmental concerns are not a factor, many of the constructed buildings were built to the specific requirements of the scientific or technical equipment housed within them. It is cost prohibitive to retrofit these buildings to meet the exacting requirements of modern scientific equipment. In addition, a large number of the support operations on the NNSS were housed in modular buildings, lightweight prefabricated structures (i.e., Quonset huts), or portable trailers and

structures that had limited life spans and have not aged well in the harsh desert climate. It is more practical to remove these dilapidated structures and bring in contemporary portables that meet modern building codes.

Section 111 of the NHPA builds on the Public Buildings Cooperative Use Act of 1976 and allows federal agencies to lease historic properties to public or private entities for alternative uses. After consultation with the ACHP, federal agencies may also enter into agreements with outside entities to manage the historic buildings or property. The NNSA/NFO has not considered using Section 111 or other authorities to lease historic properties to outside entities. The NNSS is an active scientific facility closed to the general public. Transfer, lease, or sale of historic properties at the NNSS is not generally applicable given the security missions operating at the site.

One obstacle to using Section 111 is the legacy of environmental contamination from historic nuclear testing. Areas of the NNSS are contaminated from the hundreds of nuclear tests and support operations that have occurred there. The EM NV is tasked with remediating and managing these contaminated areas, which often include historic properties. Accomplishing these corrective actions is a priority for the EM NV and often includes a "clean closure" that requires the removal of all contamination from a site. Contaminated sites include buildings, structures, and other features and reuse and/or retrofitting is often not feasible.

The lease or exchange of historic properties within a complex of buildings in North Las Vegas may be considered sometime in the future. This complex serves as the headquarters for the local administrative offices of the NNSS. Most of these buildings were constructed during the historic period of significance for nuclear testing between 1951 and 1992. The NNSS GIS Integrated Planning Database lists 39 buildings, including building additions. Four of the 39 buildings are shown as National Register eligible, but these evaluations are preliminary because they were not based on the SOI's criteria or consultation with the SHPO. Determining what buildings or structures at the North Las Vegas facility (NLVF) are historic properties would require recordation and evaluation. Although these buildings would be considered contributing components to the historic significance of the NLVF, only a few are likely individually significant.

Successes, Opportunities and Challenges

The identification, protection, and reuse of historic properties whenever possible within the Mercury Historic District has been a major success for the NNSA/NFO. To ensure the NNSS operates at the highest level necessary to meet its national security mission, all existing structures and utilities at Mercury require repair, upgrades, maintenance, ongoing custodial support, and additional improvements. The NNSA/NFO planned to modernize Mercury and its plans included anticipated demolitions, consolidations, and rebuilding.

The townsite of Mercury had never been systematically recorded and the opportunity presented itself to evaluate this historic base camp. A total of 900 acres was surveyed for architectural resources. These efforts resulted in the identification, recordation, and evaluation of the Mercury Historic District, including the identification of its contributing components. The NNSA/NFO determined the district was eligible to the NRHP for its national significance and importance in supporting nuclear testing and scientific research from 1951 to 1992 during the Cold War era. The

district was found to contain 154 buildings, structures, and landscapes. Of these resources, all except one were determined to be contributing elements to the district during its period of significance.

To meet the challenges of renovating a historic district, the NNSA/NFO realized early in the process that modernization and maintenance efforts—including new construction—would have direct, indirect, and cumulative effects on the Mercury Historic District. The NNSA/NFO consulted with the SHPO to develop and execute the Mercury PA. The NNSA/NFO agreed that modernizing Mercury in accordance with the stipulations of this PA would ensure that effects to historic properties would be adequately assessed and implementation of the Mercury PA would satisfy the NNSA/NFO's Section 106 responsibilities for all aspects of the modernization.

As part of efforts to resolve the cumulative effects of modernization on the Mercury Historic District, a detailed historic context was prepared that described Mercury's origin, history, layout, and construction; its administrative, scientific, and residential functions; its significance in the development of the former Nevada Test Site (now known as the NNSS) and its accomplishments; and its character as a community.

In consultation with the SHPO, the NNSA/NFO divided all resources in the Mercury Historic District into three categories. The Mercury PA stipulated standard treatment measures for each of the three categories. Treatments range from documenting less distinctive resources with only SHPO Architectural Resource Assessment (ARA) forms and digital images to documenting unique resources with high-quality, large-format, black-and-white photographs; locating copies of historic facility architectural and engineering drawings; and completing ARA forms. In some cases, only the best representative of a resource type was documented to serve as a representative of that resource type. This permitted the NNSA/NFO to avoid further recordation of similar resources. This streamlined mitigation efforts immensely and yielded major cost and time savings.

Finally, once the results of this important study were declassified, they were shared with members of the general public through the OSTI website at https://www.osti.gov. The report *The Architecture of Mercury: Nevada's Boom Town* and additional reports that detailed other resources in the Mercury Historic District, including the Mercury Bowling Alley, are available and showcase the excellent work conducted by the NNSA/NFO at the NNSS, which is our nation's premier high-tech national security asset in southern Nevada.

Aerial overview of the town of Mercury, the main base camp at the NNSS.

Aerial overview of Test Cell C. Several buildings and structures have been removed since this photo was taken.

Tribal representatives in front of a rock shelter with a stone doorway at Ammonia Tanks.

Pohs (tinajas) at Ammonia Tanks. Pohs are described in tribal stories as footprints used for bringing rain and to help define ceremonial routes.

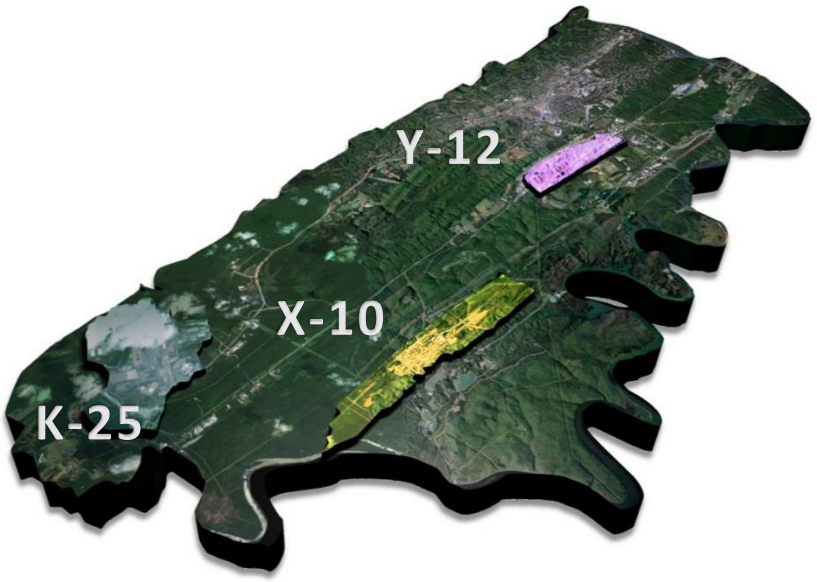
American Indian participants in the NNSA/NFO's 2019 tribal update meeting.

Aerial overview of the NNSA/NFO North Las Vegas facility.

Oak Ridge Reservation

Introduction

The DOE Oak Ridge Reservation (ORR) covers 52 square miles of land in Roane and Anderson Counties, Tennessee. The ORR encompasses about 13,300 hectares (33,866 acres). The reservation was established in the early 1940s by the Manhattan District of the U. S. Army Corps of Engineers and once served as the headquarters of the Manhattan Project. Originally named "Clinton Engineering Works" the now known ORR contained a nuclear reactor (X-10), electromagnetic separation facility (Y-12), a liquid thermal diffusion plant (S-50) and, a gaseous diffusion plant (K-25). The world's first nuclear graphite reactor, X-10, was built on the ORR to produce plutonium. The enriched uranium produced through diffusion and electromagnetic separation within ORR facilities fueled the world's first atomic bomb to win World War II. Post World War II under the authority of the U.S. Atomic Energy Commission, the ORR continued to play a vital role in the Cold War efforts. Today, the ORR is one of DOE's most complex sites, it encompasses three major facilities managed by three DOE Program Secretarial Offices who perform every mission in the DOE portfolio. Today scientists at the Oak Ridge National Laboratory, DOE's largest multipurpose national laboratory, conduct leading-edge research in advanced materials, alternative fuels, climate change, and supercomputing. The Y-12 National Security Complex, mission is to maintain the safety, security, and effectiveness of the US nuclear weapons stockpile and reducing the global threat posed by nuclear proliferation and terrorism. The East Tennessee Technology Park, a former uranium enrichment complex, is being transitioned to a clean, revitalized industrial park. The ORR continues to evolve as it adapts to meet the changing national security, clean-up, and applied and basic research needs for the United States of America.



Oak Ridge Reservation

Native Americans first inhabited the ORR during the Woodland Period (C. 1000 BC to AD 1000). European settlers arrived in the ORR area in the late 1700s. Approximately one thousand families lived on the ORR in the four major communities of Elza, Robertsville, Scarborough, and Wheat prior to the government's acquisition of the land in the 1940s. The ORR has an exceptional variety of natural, cultural, and historic resources. A number of architectural and historical assessments/surveys have been conducted since the 1970s to determine historical significance and/or National Register of Historic Places (NRHP) eligibility of resources on DOE owned ORR land. The reservation contains more than 45 known prehistoric sites, 32 cemeteries, 1 National Historic Landmark (NHL) and several NRHP-eligible properties.

Pursuant to the *Programmatic Agreement Among the Department of Energy Oak Ridge Office, The Tennessee State Historic Preservation Officer, and the Advisory Council on Historic Preservation*

Concerning Management of Historical and Cultural Properties at the Oak Ridge Reservation a Cultural Resource Management Plan was prepared. The DOE ORR Cultural Resource Management Plan provides a mechanism by which the DOE will comply with cultural resource statutes, address cultural resources in the early process of its undertakings, and implement necessary protective measures for its cultural resources prior to initiating undertakings. Both the DOE Y-12 National Security Complex and the Oak Ridge National Laboratory have specific Programmatic Agreements with the Tennessee State Historic Preservation Officer (TN SHPO) and the Advisory Council concerning the management of historical and cultural resources at each Program Site. Historic Preservation and Cultural Resource Management activities for the East Tennessee Technology Park are executed through a *Memorandum of Agreement among the Department of Energy Oak Ridge Office of Environmental Management, the DOE Federal Preservation Officer, The Tennessee State Historic Preservation Office, the Advisory Council on Historic Preservation, the City of Oak Ridge, Tennessee, and the East Tennessee Preservation Alliance*. Compliance with the National Historic Preservation Act is also maintained in conjunction with the National Environmental Policy Act (NEPA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) compliance.

The National Defense Authorization Act of 2015, passed by Congress and signed into law December 19, 2014, included provisions authorizing the Manhattan Project National Historical Park. The MAPR includes the X-10 Graphite Reactor, Building 9731, Building 9204 -3, and the K-25 footprint located on the ORR. The now named American Museum of Science and Energy (AMSE) was established in 1949 as part of the DOE Public Education & Outreach mission. The overall mission of the AMSE, includes displaying and interpretation of DOE history through artifacts, exhibits, and historic photographs; nuclear energy; scientific and technological missions and accomplishments; and scientific education and community programs. The DOE Consolidated Services Center manages this AMSE federally owned museum located in Oak Ridge, Tennessee.

The coordinated ORR triennial input for Executive Order 13287, Department of Energy Preserve America Report includes site narratives from the Oak Ridge Office of Environmental Management for the East Tennessee Technology Park, the Oak Ridge National Laboratory Site Office for the Oak Ridge National Laboratory and the Y-12 Nuclear Production Office for the Y-12 National Security Complex, highlighting historic and preservation work activities, progress overview and accomplishments.

Oak Ridge Y-12 National Security Complex

Introduction

The Y-12 National Security Complex (Y-12) is located on the ORR in Anderson County, Tennessee. It is located to the south of the residential section of Oak Ridge in a valley between Pine Ridge and Chestnut Ridge on Bear Creek Road. Y-12 covers over 800 acres and is ½ mile wide and 2.5 miles long. During World War II, the official reasons this location was selected for the Manhattan Project were: (1) proximity to Norris Dam for electricity, (2) Clinch River for barge traffic, (3) Southern railroad for rail transport, (4) the two ridges to shield the plant and protect the adjacent town planned to be built should the process go wrong, and (5) the sparse population and the proximity to Knoxville's labor force. During its peak in 1945, Y-12 employed 22,000 people. Y-12 was the first and only facility to develop the electromagnetic process of uranium enrichment for the first atomic that helped win World War II. The electromagnetic process is the ionization of uranium particles and the acceleration of these particles in a mass spectrometer at a velocity close to the speed of light. The stream of particles is bent by an electromagnet in an almost absolute vacuum. U-235 separates from U-238 in an arc that has a greater radius and is thus "captured" and stored. Stone and Webster designed and built the Y-12 Plant with production beginning in January, 1944. The electromagnetic plant, the first and only of its kind in the world, was operated by Tennessee Eastman Corporation, a subsidiary of Eastman Kodak. The electromagnetic process equipment was manufactured by General Electric, Westinghouse, and Allis-Chalmers. The enormous amount of electricity required for the operation of the plant was produced by Tennessee Valley Authority. The materials required to build the plant included 275,000 cubic yards of concrete and 37,562,000 board feet of lumber.

Y-12 Plant Manhattan Project Era Photo

Section 106 requirements of the National Historic Preservation Act are integrated with the NEPA review process. The proposed actions are reviewed in accordance with the Y-12's *Programmatic Agreement Among the Department of Energy Oak Ridge Operations Office, the National Nuclear Security Administration, the Tennessee State Historic Preservation Office, and the Advisory Council on Historic Preservation Concerning the Management of Historical and Cultural Properties at the Y-12 National Security Complex* to determine the level of Section 106 review required. If the proposed action will not adversely impact historic properties in accordance with the PA's programmatic exclusions, the proposed project can proceed. If the proposed action will adversely impact historic properties eligible for listing on the NRHP the Department of Energy will consult with the TN SHPO and the Advisory Council on Historic Preservation. Y-12's procedures for satisfying the NHPA and DOE requirements amidst ongoing facility operations are outlined in a 2003 Programmatic

Agreement between the DOE-Oak Ridge Office, the National Nuclear Security Administration (NNSA), the TN SHPO, and the ACHP. The DOE maintains a Cultural Resource Management Plan which contains information on the procedures regarding the management of cultural resources located on the ORR.

Several Section 106 recordation, interpretation, and documentation packages have been prepared during the 2017-2020 reporting period for the demolition of sixteen excess historic support facilities, a Phase I Archeological Survey for six earthworks located on previously undeveloped land for electrical utility improvements, and a Phase I Archeological Survey for 81 acres of undeveloped land for the future Oak Ridge Enhance Technology Training Facility (ORTTEC). Concurrence from the TN SHPO has been received for the demolition of sixteen excess historic support facilities and the Phase I Archeological survey for the six earthworks. The most current Phase I Archeological Survey final report for the 81 acres has not been submitted; however, the preliminary results revealed no archeological/architectural findings. On April 19, 2019, a letter was submitted to the TN SHPO for proposed re-use and modifications to NRHP-eligible Building 9731. TN SHPO concurrence has been received, DOE is awaiting funding to initiate the project.

Y-12's achievements of historical importance during FY 2017-2020 would consist of activities promoting the significant history of the National Security Complex, as well as compliance with NHPA. Throughout this reporting period, the following public outreach and educational events were very successful in offering visitors and new personnel an awareness of the importance of Y-12 and its historical contributions:

- Provided presentations and historical windshield tours of the plant for new hires.
- Partnered with the City of Oak Ridge, Tennessee to provide and conduct public tours of the Y-12 History Center and Building 9731 for hundreds of visitors during the City's annual Secret City Festival.
- Partnered with the AMSE to provide historic tours of the Y-12 History Center for thousands of visitors during the months of March-November.
- Provided tours for DOE VIPs, congressional staff, local schools and institutions, National Park Service staff, State Historic Preservation Office employees, and conference attendees of various organizations attending events in the Y-12 New Hope Center.
- Provided educational NHPA resources to high school girls at the annual "Introduce a Girl to Engineering" Day held at Y-12 Visitor Center.
- Partnered with National Park Service to install MAPR signs at Building 9731.
- Improved the visitor experience and accessibility in Building 9731 by installing a men's and women's restrooms.
- Expanded the Y-12 History Center exhibits by adding displays of current and future missions.

Y-12 was a critical component of the Manhattan Project and Cold War and continues to be a cornerstone of the country's nuclear deterrence efforts. Y-12's mission includes retrieving and storing nuclear materials, providing feedstock to fuel the country's naval reactors, and the continued surveillance and maintenance of the nation's nuclear stockpile.

Y-12 History Center Artifact Exhibit

The National Security Complex is historically an amazing engineering and construction marvel, and it is making history with the Highly Enriched Uranium Manufacturing Facility (HEUMF) and the Uranium Processing Facility (UPF). The HEUMF is a secure, efficient storage weapon-grade uranium that's larger than a football field. The UPF is a multiple building complex which is the first-of-its kind for enriched uranium operations in support of Y-12's missions. The UPF will reduce long-term operational costs and also provide significant safety and security improvements. The Y-12 National Security Complex continues to provide support to local and state economies by offering a safe workplace, creating business opportunities, and being a good steward of the environment.

During the 2017-2020 reporting period, the majority of proposed undertakings were reviewed internally and did not require any further Section 106 review or concurrence from the TN SHPO. The proposed undertakings were reviewed in accordance with the Y-12 Site-wide Programmatic Agreement, programmatic exclusions, and were pre-determined not to have any adverse impacts to historic properties. However, if there were any modifications to the original scope, another Section 106 review was required.

There were several proposed undertakings, not programmatically excluded that required consultation and concurrence from the TN SHPO. These proposed projects included the following: (1) Y-12 National Security Complex, Electrical Utility Improvements Anomalous Earthworks Archeological Survey, (2) Phase I ORTTEC Archeological Survey for 81 acres of undeveloped land for the proposed Oak Ridge Enhance Technology Training Facility; the (3) Y-12 Demolition of 16 Buildings, Oak Ridge, Anderson County, TN involving the demolition of 16 excess historic support facilities, and the (4) Building 9731 Rehabilitation, Oak Ridge, Anderson County, TN.

Identifying Historic Properties

Building upon previous Section 3 reports, the Y-12 National Security Complex identification methods have not changed during the 2017-2020 reporting period. Y-12 have several digital sources available that contains specific building information and identify the location of historic properties. One of the digital sources used at Y-12 is the Facilities Information Management System (FIMS) database. The database assists with planning and managing all of Y-12's real property assets. The real properties

are designated in the FIMS database as one of the data elements: not evaluated, not eligible, listed on Historic Register, listed as NHL, or non-contributing element of NHL/National Register Listed (NRL) district. When the status of a real property changes, as a result of a survey conducted, the Cultural Resource Coordinator ensures the changes are captured in the FIMS database. Another digital source used at Y-12 is Your Area Mapping System (YAMS) database. YAMS is also a controlled database used internally for project planning purposes and captures the same historic designations as the FIMS database which promotes the awareness and identification of historic properties. As part of the current effort to update the Y-12 Survey Document, a Geographical Information System (GIS) is being developed primarily for the Y-12 Cultural Resource Coordinator to assess historic properties in terms of their location and relative historical significance. Due to sensitive information, all digital sources are managed and accessed by limited Y-12 personnel.

During the 2017-2020 reporting period, the majority of proposed undertakings were reviewed internally and did not require any further Section 106 review or concurrence from the TN SHPO. The proposed undertakings were reviewed in accordance with the Y-12 Site-wide PA exclusions and were pre-determined not to have any adverse impacts to historic properties. However, if there were any modifications to the original scope, another Section 106 review was required. There were several proposed undertakings, not programmatically excluded that required consultation and concurrence from the TN-SHPO. These proposed projects included the following: (1) Y-12 National Security Complex, Electrical Utility Improvements Anomalous Earthworks Archeological Survey, (2) Phase I ORTTEC Archeological Survey for 81 acres of undeveloped land for the proposed Oak Ridge Enhance Technology Training Facility, the (3) Y-12 Demolition of 16 Buildings, Oak Ridge, Anderson County, TN involving the demolition of 16 excess historic support facilities, and the (4) Building 9731 Rehabilitation, Oak Ridge, Anderson County, TN.

During the 2017-2020 reporting period, Y-12 has continued partnerships with the AMSE and the East Tennessee Historical Society. Y-12 has a loan agreement with the AMSE and the East Tennessee Historical Society for the loan of historic artifacts for exhibit purposes.

Protecting Historic Properties

The Y-12 NHPA program and associated procedures in place during the 2017-2020 reporting period continue to be effective in protecting our historic properties. The working relationship with the Y-12 NHPA Coordinator, NNSA, and DOE ORR Compliance Coordinator has proven to be well established and effective. The Y-12 NHPA program consists of one professional staff person and has not changed over the years. However, the challenge continues to be the cataloguing of historic artifacts and archiving due to the overwhelming need to disposition current artifacts and store the remaining artifacts in a more permanent location.

During the 2017-2020 reporting period, Y-12 partnered with the University of Tennessee to foster relationships with college students to assist the NHPA Coordinator in cataloguing historic artifacts and archives in the PastPerfect Artifact Collections database. The goal was to obtain students majoring in history and/or library science to use their knowledge and experience to initiate the process of inventorying Y-12 historic artifacts and archives. Initially the college students were paid summer interns, but the process evolved into hiring students during the school year as non-paid

employees for college credits. One disadvantage to this approach was the students only had a short window of time (10-12 weeks) to accomplish artifact inventorying task, which proved not to be enough time to catalogue many artifacts. This is an ongoing process and Y-12 will continue to seek the opportunity to partner with local colleges and universities. The artifact collections database can only be accessed by the Y-12 NHPA Coordinator.

Y-12's *Programmatic Agreement Among the Department of Energy Oak Ridge Operations Office, the National Nuclear Security Administration, the Tennessee State Historic Preservation Office, and the Advisory Council on Historic Preservation Concerning the Management of Historical and Cultural Properties at the Y-12 National Security Complex* has been in use since 2003. Streamlining the Section 106 review process by using the PA programmatic exclusions has made a tremendous impact on decreasing project delays, which ultimately impacts costs. Being able to work closely with the project teams and educating them on the importance of protecting our historic properties gives them an awareness and appreciation of these facilities. It also fosters team work for discussing and seeking recommended alternatives such as "in-kind" replacements. Using the PA programmatic exclusions has proven overall to build better working relationships and is very rewarding for the project teams and the NHPA Coordinator. The current PA is being updated and revised in consultation with the TN SHPO.

Using Historic Properties

During the 2017-2020 reporting period, Y-12 has had no new heritage tourism efforts, but continues to partner with the City of Oak Ridge, the Arts Council of Oak Ridge, and the Oak Ridge Convention & Visitors Bureau to provide and conduct public tours for the annual Secret City Festival. Visitors are allowed guided limited access to Building 9731, a MAPR facility, to view various historical exhibits, displays, and a collection of Manhattan Project era artifacts to include the alpha and beta prototype calutrons. Cold War artifacts are on display as well. The Secret City Festival attracts hundreds of visitors from throughout the U.S. The visitors gain a knowledge and understanding of Y-12's rich history and the role Y-12 played in helping to win World War II.

Y-12 National Security Complex Building 9731

The requirements of the Integrated Facilities Disposition Program (IFDP) directly impact current preservation strategies. The IFDP's mission is to "*protect workers, the public, and the environment, and enable…ongoing Departmental goals and our National mission-based research, defense, and energy programs.*" Implementation of the IFDP will reduce risk to workers, the public, and the environment from potential exposure to radioactive and hazardous material; eliminate increasing annual surveillance and maintenance cost for obsolete, inactive facilities; and enable completion of the Environmental Management mission in Oak Ridge. The initial IFDP project in 2009 was classified as a "Program," however, in 2016 as it was recognized that such a large magnitude of scope and

schedule could be most successfully addressed as smaller discreet projects. On October 18, 2016, the Chief Executive for Project Management signed the Memorandum "*Approval to Implement a Revised Management and Execution Approach for the Oak Ridge Office of Environmental Management Integrated Facility Disposition Program.*"

Y-12 is still one of the most secure DOE installations; and therefore, has not used Section 111 to lease or exchange any of its historic facilities during the 2017-2020 reporting period. However, the continued use of historic properties and re-use of historic properties not being fully occupied by Y-12 personnel is highly encouraged during the early planning phase of new proposed projects. A great example of this would be the re-use of Building 9731 discussed as one of Y-12's opportunities to use a historic property in the site's inventory.

Successes, Opportunities and Challenges

Y-12, in consultation, received concurrence to re-use one of its historic MAPR properties, Building 9731. Building 9731 is being considered to accommodate a "State-of-the-Art" training facility and an Interpretative Center. Building 9731, known as the Pilot Plant, was the first production building completed at the Y-12 site, and the first building to house the special equipment used for the electromagnetic separation process that enriched uranium used in the first atomic bomb that helped bring an end to World War II. During the Manhattan Project era, this specialized equipment, known as alpha and beta calutrons, served as test beds for the original uranium separation process which separated uranium 235 from uranium 238 in a two-phase process. In the first phase of the process, the alpha calutrons enriched the uranium up to 10-20%. In the second phase of the process, the Beta calutrons enriched the uranium up to weapons grade material. Building 9731 historically operated two alpha and two beta calutrons. Currently, these original calutrons continue to be housed in Building 9731. Building 9731 also houses the calutron trainer used to train the cubicle operators prior to being placed in the full production areas, which virtually trained all the Manhattan Project workers that operated the site's calutrons.

Oak Ridge East Tennessee Technology Park

Introduction

The East Tennessee Technology Park (ETTP), formerly known as the K-25 Site, is located approximately 10 miles west of Oak Ridge, Tennessee and had five Gaseous Diffusion Process buildings (including the K-25 Building) as well as approximately 500 other support structures. Construction began on the U-shaped K-25 Building in 1943 as part of the Manhattan Project to enrich uranium in support of the war effort using the gaseous diffusion process. The K-25 Building, the heart of the enrichment process, was a 44-acre, mile-long, and "U" shaped plant, four stories high and up to 400 feet wide. It contained almost 3000 diffusion units to separate the uranium 235 isotope from the uranium 238 isotope. Uranium 235 is the fissionable isotope that is used in nuclear reactors and weapons. Also, located at ETTP was the thermal diffusion process, S-50, that also produced slightly enriched uranium 235 for the Manhattan Project. In the 1980s, a reduction in the demand for nuclear fuel resulted in the shutdown of the enrichment process and production ceased. The emphasis of the mission then changed to environmental management (EM) and remediation operations; in 1996, the name was changed to the "East Tennessee Technology Park."

K-25 Building Demolition Footprint

EM and remediation operations consist of operations such as waste management, the cleanup of outdoor storage and disposal areas, the demolition and cleanup of facilities, land restoration, and environmental monitoring. Proper disposal of huge quantities of waste that were generated over the course of production operations is also a major task. Beginning in the 1990s, reindustrialization (the conversion of underused government facilities for use by the private sector) also became a major mission at ETTP. Reindustrialization allows private industry to lease and purchase underused land and facilities, thus providing both jobs and a new use for facilities that otherwise would have to be demolished.

In 2001, DOE identified the K-25 Building as a Manhattan Project signature facility and original intentions were to preserve a portion of the facility. However, severe structural deterioration and extensive contamination concerns made it impossible to preserve any portion of the K-25 building except for portions of the building slab. The Oak Ridge Office of Environmental

Management (OREM) worked with stakeholders to develop a memorandum of agreement which would preserve the historical significance of ETTP and in 2012, DOE signed the MOA with 11 other

parties to interpret and commemorate the significance of the former gaseous diffusion plant and its role in the Manhattan Project. This agreement had multiple elements designed to offset the loss of significant historical properties at ETTP. Some of the primary components of this agreement are to design and construct an equipment building (to house replica process gas equipment), a viewing tower which will facilitate an understanding of the scope and scale of the original K-25 Building; a history center which would allow visitors to view artifacts; and other exhibits. The MOA also preserved the footprint of the K-25 Building.

On November 10, 2015, DOE and the U.S. Department of Interior signed a MOA establishing the MAPR. The MOA defines the respective roles and responsibilities of the departments in administering the park and includes provisions for enhanced public access, management, interpretation, and historic preservation. A portion of ETTP (the K-25 Gaseous Diffusion Building footprint) is included within the MAPR. As part of the activities to establish the park, DOE released the K-25 Virtual Museum, which is a website that details the history of the K-25 Gaseous Diffusion Plant through narrative and photographs.

K-25 History Center Building Exterior

Identifying Historic Properties

No additional attempts to identify historical properties have been completed in the last three years. A historical architectural survey was completed in 1998 that identified all the historic properties at ETTP (formerly the K-25 Site). A number of MOAs were drawn up for the historical interpretation of the former K-25 Gaseous Diffusion Plant. Most of the stipulations concerning historical preservation have been completed.

Some of the primary components of the ETTP MOA was to design and construct an equipment building (to house replica process gas equipment), a viewing tower which will facilitate an understanding of the scope and scale of the original K-25 Building; a history center which would allow visitors to view artifacts; and other exhibits. The MOA also preserved the footprint of the K-25 Building. To date the history center has been completed and the K-25 Building footprint preserved.

The ETTP MOA consulting parties and stakeholders continue to provide support as the final MOA stipulations are being completed. No geospatial data has been collected for the historical properties, although documents, maps, and drawings of the site are being preserved. ETTP has also loaned artifacts to local museums to display in exhibits telling of Oak Ridge history (i.e. clarion horn to Children's Museum) and donated artifacts to AMSE (bicycle and K-25 Building operator's phone).

Protecting Historic Properties

Additional project staff have been added to oversee the completion of the stipulations of the ETTP MOA, such as, overseeing the completion of the K-25 History Center and planning of the Viewing Tower and Equipment Building.

K-25 History Center Exhibits

The consulting parties and stakeholders supporting the ETTP MOA continue to meet and share correspondence and ideas on completion of the MOA stipulations.

No additional documents have been used over the last three years to promote the site's historical properties except the ETTP MOA.

Using Historic Properties

Construction of the K-25 History Center was completed and the museum was opened to the public in February 2020. The significance of the K-25 Building, the gaseous diffusion process it housed for enriching uranium during World War II and the Cold War, and the people who designed, built, and operated this facility is told through numerous exhibits, audiovisual productions, and over 300 artifacts from the K-25 Site on display. This K-25 History Center will aid to bring tourist to the Oak Ridge area. ETTP is also part of the AMSE summer bus tours.

Reindustrialization of the site into an industrial park is the final goal of DOE. This has been accomplished using Sections 106, 110, 111 of the NHPA.

It is the intention that all the property at ETTP is to be transferred to the public as the site is being decommissioned and decontaminated for industrial use.

Successes, Opportunities and Challenges

The construction of the K-25 History Center and proposed construction of a Viewing Tower and Equipment Building are telling the story of the K-25 Site to the public. The preservation of the K-25 Building footprint contributes to showing the enormity of the activities that took place at the K-25 Site. The DOE subcontract for operating the AMSE was expanded to include scope for operation.

Oak Ridge National Laboratory

Introduction

In 1947, the Atomic Energy Commission designated the facilities at Oak Ridge the Clinton National Laboratory and in 1948 renamed the lab the Oak Ridge National Laboratory (ORNL). ORNL is the oldest national laboratory on its original site and the site of the world's oldest nuclear reactor. Today, ORNL is the Department to Energy's largest science and energy national laboratory, with scientific programs focused on materials, neutron science, energy, high-performing computing systems, biology, and national security. The DOE partners with the state of Tennessee, universities, and industries to solve challenges at ORNL in areas of advanced materials, energy, manufacturing, security, and physics. The laboratory's science and technology innovations are translated into applications for economic development and global security. The laboratory is home to several of the world's top supercomputers and is a leading neutron science and nuclear energy research facility that includes the Spallation neutron Source and High Flux Isotope Reactor. ORNL is home to a DOE leadership Computing Facility: a DOE nanoscience center, the BioEnergy Science Center, and the Consortium for Advanced Simulation of Light-Water Reactors.

Oak Ridge National Laboratory

ORNL facilities are located primarily within Bethel and Melton Valleys and on Chestnut Ridge, occupying a combined footprint of approximately 4470 acres. The Main Campus includes the National Register-Eligible ORNL Historic District originally associated with scientific missions and accomplishments during the Manhattan Project and post WWII Cold War Era, but whose period of historic significance is now recognized to extend into subsequent decades as ORNL continued with original scientific missions while developing into the nation's largest multi-disciplinary National Laboratory. The main campus consists of buildings and structures exhibiting a wide assortment of structure types, purposes, and appearance. Many of the WWII and Cold War Era facilities were constructed as temporary, utilitarian structures with few amenities, yet with minimal improvements remained in service until recent years. Other historic facilities represent the original efforts to establish ORNL as a National Laboratory, with the advent of substantial permanent structures such as those found in the 3500, 4500, and 5500 areas. All of these structures have been altered from the original to varying degrees, although many of them retain something of the original character defining architectural elements. Overall, much of the ORNL campus and satellite facilities present as a harmonious blending of historic structures with nearby modern facilities, most of which were designed and constructed to be compatible with (but clearly distinct from) the original historic district.

ORNL manages historic districts and properties in accordance with the *Programmatic Agreement Among the Department of Energy Oak Ridge Operations Office, the Tennessee State Historic Preservation Office, and the Advisory Council on Historic Preservation Concerning the Management of Historical and Cultural Properties at the Oak Ridge National Laboratory*. Recent consultation with

the TN SHPO resulted in concurrence with our proposal to manage all historic ORNL properties in accordance with the Programmatic Agreement (including historic properties not listed within the original Programmatic Agreement, and also properties newly recognized as National Register Eligible). This proposal was agreed to as an interim measure while an updated Historic Preservation Plan and Programmatic Agreement are developed in consultation with the SHPO and Advisory Council. At the project level, potential adverse effects to historic properties are assessed as a part of the NEPA process that includes consultation with the DOE Site Office, the ORO Cultural Resources Coordinator, and the TN State Historic Preservation Office as stipulated within the Programmatic Agreement.

DOE completed its original historic survey and assessment of ORNL properties during 1993, and following an extended consultation process entered into the ORNL Programmatic Agreement in 2003. During the following several years, DOE has completed several undertakings addressed within the Programmatic Agreement and consulted with the SHPO regarding the project-specific details and requirements for many of these undertakings, as directed utilizing the Three Level Review process defined within the Programmatic Agreement. An updated historic architectural survey and assessment of ORNL properties was conducted during 2017 and the survey report submitted to the SHPO in early 2018. Subsequent correspondence and consultation with the SHPO resulted in proposed changes to the original Historic District boundaries and period of significance, as well as the establishment of two additional historic districts comprised of facilities that previously lacked sufficient historical context to be considered Registry Eligible.

In Melton Valley, a new historic district has been established in recognition of scientific missions and accomplishments associated with the High Flux Isotope Reactor and Radiochemical Engineering Development Center facilities. While the HFIR/REDC facilities continue operations in support of ongoing and future mission needs, the nearby Molten Salt Reactor Facility was also recently established as a Historic District but is composed of facilities that are no longer suitable for continued use, and which are being managed in standby mode pending future decision making in consultation with the Tennessee Historic Commission and Advisory Council on Historic Preservation.

Identifying Historic Properties

An updated survey of the ORNL main and satellite campuses was conducted during 2017 and resulted in the *Historic Architectural Resource Survey* report published and submitted to the TN SHPO during 2018. The survey effort involved a comprehensive study and evaluation of more than 90 percent of historic and potentially historic facilities at ORNL, and included especially detailed assessments for the 15 fully operational historic facilities deemed most likely to require future alterations and upgrades that would require consultation with and concurrence from the TN SHPO. Facilities not included during the updated survey are subject to security and other accessibility issues and will be surveyed and evaluated individually as accessibility issues for each can be resolved. Recent correspondence with the TN SHPO has resulted in an interim agreement to manage these properties working from an assumption that they are Registry Eligible.

No additional surveys and evaluations have been performed since 2017, with the exception of one decommissioned facility being considered for repurposing in support of a new research mission. ORNL Building 7709 once housed the Health Physics Research Reactor and was recently surveyed and determined Registry Eligible, and documentation is being prepared to consult with the TN SHPO about alterations needed in order to repurpose the facility.

Updated data for all ORNL facilities (including historic properties) is managed within the FIMS, a comprehensive searchable database that includes date of construction, operational status, total and net useable space (along with several other parameters). FIMS incorporates GIS functionality in the

form of site maps that the observer can adjust in order to view greater levels of detail, and this versatile system is critically important to long range planning and the generation of targeted data profiles used to meet many needs. Although an internal ORNL resource, FIMS is used to prepare data and documentation utilized to meet a plethora of internal and external planning and reporting requirements.

Over the past three years, ORNL has continued working with the DOE ORO Cultural Resources Coordinator and the TN SHPO to identify and evaluate National Register-Eligible properties and historic districts, and to re-assess the original ORNL Historic District (and properties whose NRE status was established during previous surveys). As briefly discussed above, most of these efforts have focused upon resolving the NRE status of properties assessed during the 2018 Survey Report, with the only notable exceptions being a successful consultation regarding proposed new construction within the Historic District, and the preparation of documentation for a SHPO consultation regarding a proposed repurposing of Building 7709. Over the course of this ongoing consultation process, many opportunities to promote employee and manager awareness of NHPA requirements and ORNL's responsibilities were realized as other organizations became engaged in the gathering of information and preparation of the necessary documentation and correspondence.

Cultural Resources Analysts (CRA) was engaged to conduct an independent assessment of ORNL's National Historic Preservation Act Compliance Program during 2016, and in subsequent years has partnered with ORNL in efforts to build on strengths and make recommended improvements identified in that initial assessment report.

The updated *Historic Architectural Resource Survey* undertaken during 2017 and the survey report published and submitted to the TN SHPO in 2018 was the first major effort kicking off collaborative efforts between ORNL and CRA that are ongoing and crucial to meeting our present and future responsibilities under NHPA. Preparation of the updated *Historic Architectural Resource Survey* report and subsequent associated documentation relied heavily on geospatial information and graphics drawn from FIMS and associated data groupings (as briefly described under question number one). A draft updated Historic Preservation Plan for ORNL is now under development and will also make use of informational resources supported by these systems.

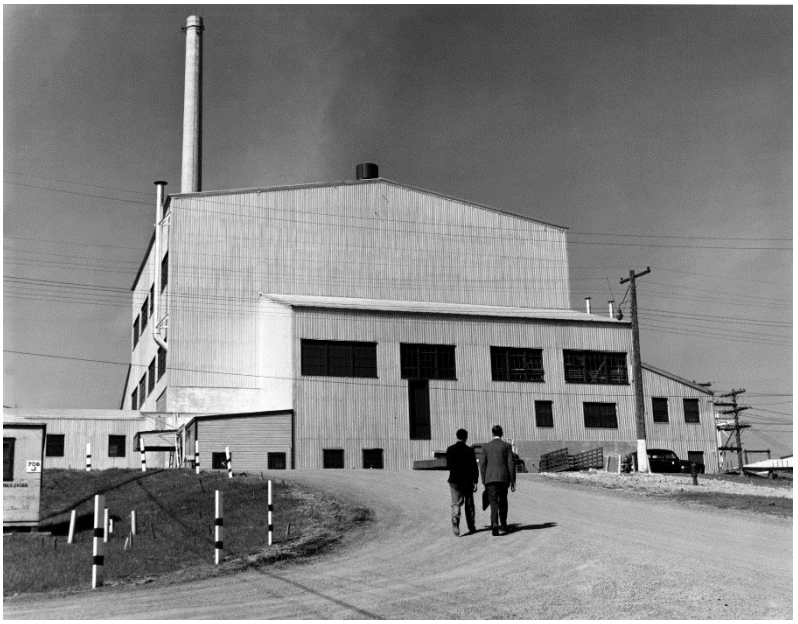
We have also recently been made aware that the Advisory Council on Historic Preservation has expressed interest in participating in our development of an updated Historic Preservation Plan and Programmatic Agreement for ORNL.

And finally, the fairly recent establishment of the MAPR will create many opportunities to partner with the National Park Service in managing and showcasing ORNL Historic Properties within this larger context. Unfortunately, further development of these opportunities are at this time severely limited due to precautionary measures during the COVID 19 pandemic.

Protecting Historic Properties

Over the past three years ORNL has substantially grown our NHPA Compliance Program level of effort, calling upon expertise and contributions from a wide variety of individuals and organizations at ORNL, and has assembled a core team of four contractor staff working in consultation with the DOE Site Office Representative for this Program. Two of the core team members are matrixed to the Program from other organizations, and each core team member supports the Program in addition to and concurrently with other duties. Core Team members within the Environmental Protection Services Division have attended Introductory and Advanced Section 106 Training provided by the

Advisory Council on Historic Preservation, and it is planned that other team members will also obtain this training once business travel restrictions have been lifted.



Oak Ridge National Laboratory Graphite Reactor Exterior, 1940s

Apart from the documentation and correspondence associated with the updated Historic Architectural Survey Report and subsequent related communications, our most noteworthy effort has been completion of a comprehensive detailed Recordation of the ORNL Biology Complex Facilities located at the Y-12 National Security Center and which has long been established as eligible for listing on the National Register. In partnership with Cultural Resources Analysts, another major Recordation is being prepared to preserve the history of other major facilities located within Y-12. Dedication of limited resources to these efforts concurrently with development of a draft updated Historic Preservation Plan has been a challenge, but we are confident that working together with the SHPO and Advisory Council all our efforts will be met with success.

Sites frequently work with SHPOs, American Indian Tribes, Native Hawaiian organizations, certified local governments, and other organizations to protect and manage historic properties. Sites are encouraged to examine their policies, procedures, and capabilities for public-private initiatives and investment and report on their progress.

As briefly discussed above, ORNL manages all historic properties in accordance with a Programmatic Agreement between DOE, the TN SHPO, and the Advisory Council on Historic Preservation. Plans for updating the existing Historic Preservation Plan and Programmatic Agreement are in early stages of development, and consultation with the TN SHPO has been initiated.

Although difficult to quantify in terms of cost savings, continued use of the existing Programmatic Agreement as an informational resource for construction project management, facilities maintenance, and strategic planning purposes cannot be overstated. In the absence of a Programmatic Agreement, consulting with the SHPO and Advisory Council on an individual basis for every proposed undertaking would catastrophically impact the safe and effective operation of historic properties at ORNL, and the consultation process alone would require a level of effort far beyond what is feasible using available resources.

Using Historic Properties

The primary means by which historic ORNL properties contribute to the local community and economy is by providing productive employment within the many buildings that remain fully operational, and by likewise providing demand for locally produced goods and services needed to support ongoing laboratory and infrastructure operations and improvements. While ORNL's overall value to the surrounding community and economy is well recognized, it would be difficult to quantify

what portion of these benefits can be credited to the continued use of our historic buildings and structures.

ORNL has for many decades been a leading force in fostering heritage tourism, showcasing DOE science missions, and accomplishments utilizing many opportunities and venues. The premier example of this would be maintaining and making publicly accessible the Graphite Reactor facility, a National Historic Landmark and a part of the newly established MAPR. Another example would be ORNL's stewardship of the American Museum of Science and Energy located in Oak Ridge, Tennessee, and participation in associated site tour programs. Unfortunately, it has been necessary to suspend all nonessential visits to ORNL since early 2020 in response to the COVID19 pandemic.

ORNL's historic properties are recognized for their value as physical representations of ORNL's place in national and world history in addition to their present day use in supporting ongoing and future DOE Science Missions. However, and as might be expected, the continued operation of aging and in many cases contaminated facilities presents unavoidable challenges in complying with environmental regulations such as the Clean Air Act, Clean Water Act, and complying with ORNL's Permit Requirements under the National Pollutant Discharge Elimination System.

Most facilities have been repurposed (to varying degrees) from their original uses over the years, due to changing needs and priorities among the many and changing programs and missions supported by ORNL. Many historic properties at ORNL continue to support ongoing DOE science missions and programs, and this reuse was made feasible through facility and building systems updates and improvements that are conducted in consultation with the DOE Site Office, the ORO Cultural Resources Coordinator, and the TN State Historic Preservation Office as stipulated within the Programmatic Agreement. Decision-making about disposition or retention of historic properties is based on careful evaluation of the suitability of the property for continued use or repurposing, together with comparison of potential costs associated with continued use, repurposing, or disposition (with options ranging from routine operation and maintenance, minor or major alterations, placement into standby mode, or demolition).

ORNL historic properties are for the most part inaccessible to the general public, and the habitable properties remain fully utilized in support of ongoing DOE Science Missions. ORNL historic properties are therefore not well suited for repurposing by means of out leasing to other government entities or the private sector.

Successes, Opportunities and Challenges

Successes

Submitted updated survey report in 2018 – successful in establishing that 6000 area facilities are not NR eligible, individually or as a historic district. Subsequent documentation and correspondence resulted in the 7000 and 7600 area facilities likewise being established as lacking NR Eligibility, individually or as historic districts. It was recommended that these facilities lacked sufficient historic context for NR Eligibility and have been redeveloped periodically such that they no longer retain integrity of their original appearance. SHPO concurrence with these recommendations have made it possible to proceed with new facility upgrades and redevelopment plans for the surrounding areas.

As briefly discussed in the above sections, subsequent consultation resulted in SHPO concurrence with ORNL's proposal to manage all historic properties in accordance with the three level review system as defined within the original Programmatic Agreement. The value of this interim measure is that it allows application of the three level review system to historic properties not specifically identified within the Programmatic Agreement. This approach mitigates the requirement to consult the SHPO on a case by case basis for all undertakings related to those facilities. In the absence of a Programmatic Agreement or this interim measure, Section 106 would require individual consultations for all undertakings associated with those facilities, including maintenance and other non-adverse-effect tasks and projects.

Another noteworthy example of successful consultation resulted in SHPO concurrence with plans to construct a substantial new facility along Central Avenue within the ORNL Historic District, which is being designed and constructed with functionality to meet the evolving needs of DOE Science Missions while in appearance presenting a modern style compatible with but clearly distinct from the surrounding historic facilities.

Challenges

Key elements of our vision for representing ORNL history through preservation of historic structures includes our assertion that ORNL history should be interpreted in terms of three major periods of historic significance: Manhattan Project and Post WWII Cold War; the Development of ORNL into the nation's largest multi-discipline National Laboratory; and Redevelopment of ORNL into a position of world leadership in critically important science missions and programs (this third period of significance began 20 years ago with UTBs successful bid to operate ORNL). Another key element of our vision for meeting ORNL's responsibilities under NHPA involves resolving the proposed historic status of the 1000 and 1500 Areas at ORNL. While all these facilities are currently less than 50 years old, this part of the main ORNL Campus presents with a unique architectural style that provides the basis to consider making it a Historic District once sufficient historical context is established. Given the integrity of its different look and feel from the original Historic District, and its association with a later period of significance and totally unrelated Science Missions and Programs, we recommend that the Marilyn Lloyd Environmental and Biological Sciences Complex should be evaluated against the NRE Criteria separately from the original ORNL Historic District.

Going forward, the next major challenge will be to demonstrate our commitment to honoring ORNL history (as represented by NRE facilities and historic districts), and also to demonstrate our unique capability to realize a clear vision and concept around which to develop an updated Historic Preservation Plan and Programmatic Agreement in consultation with the SHPO and Advisory Council.

Office of Legacy Management

Introduction

The Department of Energy established the Office of Legacy Management (LM) in 2003 to fulfill the Department's post closure long-term stewardship obligations at sites that were contaminated during World War II and the Cold War. Currently, LM has responsibility for 100 sites, in 29 states and Puerto Rico. The histories of the legacy sites vary.

Historically, most LM sites supported the Manhattan Project during World War II and the U.S. Atomic Energy Commission (AEC) during the Cold War. They were involved with uranium milling and processing, energy research, and manufacturing associated with nuclear weapons production. In addition, LM has sites where underground nuclear tests and experiments were performed for various purposes, including stimulating natural gas production and cataloging seismic detonation signatures. LM also has four decommissioned early demonstration power reactors.

Ownership status varies among LM sites. Approximately half of LM sites are not federally owned. At many of these non-federally owned sites, LM's responsibilities consist of managing site records and responding to stakeholder inquiries.

Approximately half of LM sites are federally owned. Many of these sites consist of an engineered disposal cell containing contaminated materials, covered with an earthen or rock cover and surrounded by a buffer area. Typical activities at these sites include inspections, groundwater monitoring, maintenance activities, and noxious weed control. Occasionally, these sites require modifications to a groundwater monitoring well network, erosion control, or other maintenance, such as road and fence repair.

At LM sites with disposal cells the proposed locations of the engineered cells and associated ground-disturbing activities were surveyed for archaeological resources prior to being disturbed. Archaeologically important sites were avoided or removed before construction activities began. A complete survey was conducted at smaller sites where the cell occupies most of the property. However, complete archaeological surveys were often not performed at larger sites. The majority of buildings and structures associated with these disposal sites have been erected since 1985 and none are old enough yet to merit evaluation for historic significance.

DOE is the lessee of historic buildings at LM's offices at Grand Junction, Colorado. DOE also owns or leases non-historic buildings and non-historic trailers at 12 locations nationwide, nine of which are co-located on LM sites. The buildings and trailers are used as storage sheds, office spaces, records storage buildings, warehouses, and public interpretive centers.

The Fernald Preserve Visitors Center is a 10,000-square-foot, platinum-certified U.S. Green Building Council Leadership in Energy and Environmental Design facility that interprets the rich and varied history of the Fernald site. A series of exhibits place the site's uranium production and environmental cleanup eras into a broad historical perspective, acknowledging Native American occupation, European settlement, agricultural production, ecological restoration and today's legacy management mission.

The Weldon Spring Site Interpretive Center presents a window to the past and DOE's commitment to the future through long-term surveillance and maintenance of the Weldon Spring Site and a strong community partnership. Adjacent to the center is the 75-foot-high Weldon Spring disposal cell with a viewing platform that offers a panoramic view of St. Charles County and the surrounding Howell Prairie. A new facility is under construction to house site offices and the Interpretive Center.

LM also manages the Uranium Leasing Program (ULP), administering 31 lease tracts within the Uravan Mineral Belt in southwestern Colorado. In addition, LM manages the Defense-Related Uranium Mines (DRUM) Program. The DRUM Program is a partnership between DOE, federal land management agencies, state Abandoned Mine Lands programs, and tribal governments to verify and validate the condition of abandoned uranium mines that provided uranium ore to the AEC for defense-related activities.

Identifying Historic Properties

In 2019, LM developed and implemented a new cultural resource management training module that is mandatory for staff involved with site work. In addition, LM has seen an overall increase in cultural resources management activity during the past 3 years.

Section 106 consultation has increased substantially, in part, due to incremental improvements being made at numerous sites. For example, LM has consulted regarding the installation of permanent concrete aerial survey monument markers at 20 disposal cell sites. In addition, several LM sites have been evaluated for their historic significance through Section 110 surveys.

At some LM sites, previously identified archeological sites have been revisited and mapped using global positioning system technology to map the sites to sub-meter accuracy. When information is unavailable, proposed work areas are surveyed for the presence of archaeological sites, tribally important sites, traditional cultural properties, and cultural landscapes. The results include detailed digital spatial data on site locations and site boundaries. LM's avoidance of archaeological sites is greatly assisted by accurate geospatial data.

LM receives sites after they have already had varying degrees of archeological surveys performed in relation to cleanup activities. Paper maps of areas previously surveyed are currently being digitized. During the last 3 years, LM has had archaeological survey work conducted when proposed undertakings were planned for locations without data or where the existing data had become sufficiently dated to be considered unreliable. LM has also had surveys conducted for undertakings planned at properties outside of its control.

During the past 3 years, seven archaeological surveys and one historic property survey were conducted in support of Section 106 consultation.

- **Shiprock, New Mexico, Disposal Site**– 903-acre archaeological survey in support of routine maintenance and infrastructure improvements.
- **Monument Valley, AZ, Processing Site**– 386-acre archaeological survey in support of expanded groundwater investigation.
- **Piqua, Ohio, Decommissioned Reactor Site**– 0.5-acre archaeological survey in support of potential adverse effects.

- **Lakeview, Oregon, Disposal/Processing Site**– 25-acre archaeological survey in support of the construction of aerial survey monument targets, routine maintenance, and removal of groundwater monitoring wells.
- **Burro Mines Complex, Colorado**– 93-acre archaeological survey and a historic property survey in support of proposed reclamation activity at a defense-related uranium mine on a lease tract of managed by LM's ULP.
- **Bronco, Colorado, Site**– 31-acre archaeological survey in support of proposed well removal and reclamation activity.
- **Mexican Hat, Utah, Disposal Site**– 100-acre archaeological survey in support of proposed groundwater monitoring wells; fieldwork and report by subcontractor; Section 106 consultation package submitted by LM.

In two instances, LM partnered with other agencies to complete archeological surveys. BLM conducted the survey of the Burro Mines Complex in southwestern Colorado. The U.S. Army Corps of Engineers conducted the archeological survey at the Piqua, Ohio, Decommissioned Reactor Site.

During the past 3 years, four historic property surveys were also conducted in accordance with the Section 110 requirements to evaluate sites for potential for historic significance.

- **Piqua, Ohio, Decommissioned Reactor Site**– LM completed a historic property survey of a decommissioned former nuclear reactor located in Piqua, Ohio.
- **Site A/Plot M, Illinois, Decommissioned Reactor Site**– LM completed a historic property survey of the former location of Chicago Pile 2 (CP-2), the only operational nuclear reactor in the world from March 20– November 20, 1943, as part of the Manhattan Project.
- **Hallam, Nebraska, Decommissioned Reactor Site**– LM completed a historic property survey of an experimental nuclear reactor located outside of Hallam, Nebraska.
- **Rulison, Colorado, Site**– A historic property survey of the location of Project Rulison, an underground nuclear test in 1969 designed to enhance natural gas production from the low-permeability gas bearing sandstones.

Protecting Historic Properties

LM used the Section 106 consultation process during the planning for the conversion of a building into an interpretive center, named the Atomic Legacy Cabin. The building is a contributing element to the National Register of Historic Places-listed Department of Energy, Grand Junction Office historic district. LM's office at Grand Junction is nationally significant under Criterion A under the Military, Industry, and Politics/Government areas of significance for its role in the Manhattan Project and Cold War from 1943 to 1970.

Throughout Section 106 process, LM coordinated with the City of Grand Junction, Mesa County, an architectural and engineering firm, and the private property owner (LM is the leasee). The planning, outreach, and consultation resulted in the successful conversion of the property into a community asset dedicated to the historic interpretation of the uranium story on the Colorado Plateau.

LM continues to use an existing Programmatic Agreement that was executed for its ULP in 2014. Activities covered by the PA include exploration, mining, and reclamation on ULP lease tracts in Mesa, Montrose, and San Miguel counties in southwestern Colorado. The PA outlines actions LM and consulting parties will take to evaluate the potential impacts of activities on historic or cultural properties. The PA requires LM conduct briefings, no less than annually, with consulting parties to discuss proposed ULP activities, receive input from parties, and summarize prior activities. No exploration, mining, or reclamation activities have occurred on any ULP lease tracts since the signing of the PA.

LM is currently developing a PA with the Navajo Nation Heritage and Historic Preservation Department (NNH&HPD), the Navajo Nation Tribal Historic Preservation Officer, regarding Section 106 consultation for the four LM sites on the Navajo Nation: the Shiprock, New Mexico, Disposal Site; the Monument Valley, Arizona, Processing Site; the Tuba City, Arizona, Disposal Site; and the Mexican Hat, Utah, Disposal Site.

Using Historic Properties

LM actively seeks out potential reuse opportunities associated with LM's diverse mix of sites and assets. For example, on June 6, 2019, LM hosted a ribbon-cutting ceremony for its Atomic Legacy Cabin, an interpretive center located in a historic building leased by LM at its Grand Junction, Colorado, office. The cabin once was the epicenter of the nationwide search for uranium that was started by the Manhattan Project and later escalated during the Cold War.

LM is also coordinating with the City of Piqua, Ohio, regarding the Piqua, Ohio, Decommissioned Reactor Site. LM determined the site as eligible for listing on the National Register of Historic Places and Ohio State Historic Preservation Office concurred in 2018. The site is owned by DOE and has been leased to the city of Piqua at no cost from 1969 to present. However, the city vacated the property in 2018 and the site facilities are currently vacant. DOE is evaluating a long-term path forward for the site in accordance with the National Environmental Policy Act and the National Historic Preservation Act. When the entombed radiological materials achieve unrestricted release criteria, site ownership will revert to the city of Piqua.

Successes, Opportunities and Challenges

In many instances, LM has long-term stewardship responsibilities at properties it does not own. Therefore, partnering with other entities to nominate LM sites to the National Register of Historic Properties presents a unique opportunity to LM. For instance, as part of ongoing collaboration, in 2020 LM provided a draft National Register nomination package for its Gasbuggy, New Mexico, Site to the U.S. Forest Service. The site is located in the Carson National Forest, which is under the jurisdiction of the U.S. Forest Service. Project Gasbuggy was the first natural gas reservoir stimulation experiment in the Plowshare Program, which was designed to develop peaceful uses for nuclear energy. The AEC, the U.S. Department of the Interior, and the El Paso Natural Gas Company jointly sponsored Project Gasbuggy.

Figure 1. A vertical uranium ore bin in the Burro Mines complex, San Miguel County, Colorado. This historic structure, which is adjacent to a public road, is being retained in place because of its visual presence and its interpretive value.

Figure 2. Atomic Legacy Cabin, Grand Junction, Colorado, August 2020.

Pacific Northwest National Laboratory

Introduction

The Pacific Northwest National Laboratory (PNNL) is one of DOE's ten national laboratories, with an emphasis on breakthrough science and technology in the areas of energy and environment, fundamental and computational science, and national security. PNNL is comprised of two main campuses in Richland, and Sequim, WA with satellite offices in Portland, OR, Seattle, WA, College Park, MD, and Washington DC. Battelle Memorial Institute (BMI) operates the lab on behalf of the Department of Energy Pacific Northwest Site Office (DOE-PNSO).

The PNNL Richland campus encompasses 664 acres (269 hectares), which include approximately 50 leased and federally-owned buildings. Research is performed through several directorates and has one user facility (Environmental Molecular Sciences Laboratory). The 300 area of the adjacent Hanford Site is also managed and operated by BMI on behalf of DOE-PNSO.

Figure 1. PNNL Richland campus. The 300 area of the Hanford Site is seen in the distance.

The site has over 11, 000 years of documented history, including historic properties significant to the Columbia Plateau tribes. In June 1964, the U.S. Joint Committee on Atomic Energy approved a bill that allowed the Atomic Energy Commission to lease or sell land and buildings on the Hanford Site, and to segment Hanford's operations, in part to support the local economic diversification program. In 1965, the AEC contracted with the Battelle Memorial Institute, a large private and non-profit research foundation, to operate the then-Hanford Laboratories. Battelle bought 230 acres (93 hectares) of former Camp Hanford land, a construction camp for the Hanford Site during the 1950s, from the City of Richland to build its facilities. Battelle hired Seattle-based architectural firm Naramore, Bain, Brady and Johanson (NBBJ) to design the research and development campus.

As a multiprogram laboratory, PNNL conducted contract research and development work for the AEC, industries, and other government agencies. PNNL expanded their AEC programs to manage the Waste Solidification Engineering Prototype program; built and tested a 1.5 million-watt resistance heater for the Advanced Test Reactor in Idaho Falls, Idaho; and, under a contract with the Federal Water Pollution Control Administration in 1969, designed and tested a physical-chemical system for treatment of combined storm-sanitary sewage. In the late 1970s, research extended into energy, health, environmental, and national security. With the expanded areas of research, PNNL contributed to areas such as robotics, environmental monitoring, material coatings, veterinary medicine, and the formation of new plastics. In the mid-1980s, PNNL became a national laboratory.

The Sequim campus is on the west side of Washington State and is comprised of seven buildings within 117 acres (47 hectares) on Sequim Bay, research at Sequim is supported by approximately 85 staff with expertise in biotechnology, biogeochemistry, ecosystems science, toxicology, and earth

systems modeling, as well as a scientific dive team supporting in-water research and testing. Research is also focused on sustainable energy, a sustaining environment, and robust security in coastal environments.

Figure 2. Shoreline facilities at the PNNL Sequim campus.

The Sequim Campus has over 600 years of documented history. Prior to European contact, the site was known as Sxʷčkʷíyəŋ (pronounced "sh-tch-kwung"), a moderately large S'Klallam village site that controlled the mouth of Sequim Bay. In the late 1800s, the land was purchased by Hans Bugge for the development of the Bugge Cannery. The cannery was one of the largest in the country at the time of operation before portions of it burned down in 1929. Many S'Klallam members worked at the cannery until production began to slow down in the 1950s.

In April 1966, Battelle purchased 120 acres at Sequim Bay for use in marine science and technology research. The laboratory was intended to provide facilities for research projects requiring ocean waters or oceanic environments.

Today, researchers at PNNL Sequim provide innovative science and technology solutions critical to the nation's energy, environmental, and security future. Ongoing research has included long-term eelgrass growth experiments in Sequim Bay, algae biofuels research, research on toxic algae, and developing/testing innovative technologies to monitor marine organisms in high energy marine environments. Capabilities include environmental chemistry, water and ecosystem modeling, remote sensing, remediation technology research, environmental sensors, ecotoxicology, biotechnology, and national and homeland security.

The Cultural Resources program at PNNL oversees and manages all cultural resource compliance for both the Richland and Sequim sites and any other location within the United States where research may occur. The program provides direct technical support and guidance to DOE-PNSO through the development of Section 106 documentation while facilitating consultation with outside agencies, including State Historic Preservation Offices (SHPOs), tribal consulting parties, and interested parties of the public. The cultural resources review process is combined with National Environmental Policy Act (NEPA) and other lab permitting efforts.

Identifying Historic Properties

As most PNNL activities occur within Washington State PNNL uses the Washington's Department of Archaeology and Historic Preservation's Washington Information System for Architectural and Archaeological Records Data (WISAARD) server and DOE-PNSO's GIS database to identify historic properties and previous surveys. For projects in the 300 area of the Hanford Site, the GIS database managed by DOE-Richland Operations Office contractor Mission Support Alliance (MSA) is also consulted.

To date, both the Richland and Sequim campuses have been 100% surveyed as part of undertakings for future campus developments at both locations. This presents a significant increase from what was reported in the 2017 report. At PNNL Richland, the survey was completed in 2016. The documentation for this undertaking was briefly reported in the 2017 Preserve America report. The six buildings that were the original campus are now eligible for inclusion in the National Register of Historic Places individually and collectively as a historic district under Criteria A and C. In 2018, a Memorandum of Agreement was signed with tribal consulting parties to resolve adverse effects to historic properties based on the 2016 report.

In 2019, a pedestrian survey of the Preservation Designated Area within the PNNL Richland campus was done as part of mitigation under the 2018 MOA. Additional historic properties were inventoried as part of the survey.

In Sequim, the campus-wide survey was completed in late 2019. Existing site boundaries were re-examined based on fieldwork results. Similar to PNNL Richland, consultation is ongoing to develop a MOA to resolve adverse effects. Programmatic agreements to streamline Section 106 for future maintenance and operations activities is currently ongoing for both campuses.

On both campuses, staff is routinely educated about historic properties through individual or group trainings and in annual refresher courses. To bring more awareness regarding historic properties to projects, archaeological monitoring has been implemented at the Sequim campus for all ground-disturbing undertakings and is assessed on a project-by-project basis for PNNL Richland.

In addition, internal and public websites have been established to bring further awareness to historic properties and the PNNL cultural resources program.

PNSO maintains a good relationship with consulting American Indian Tribes regarding historic properties on both campuses. PNSO defers to tribal consulting parties when identifying and evaluating significant resources that may be significant to them.

PNSO has an ongoing partnership with DOE-RL, who operates the Hanford Site adjacent to the PNNL Richland Campus regarding historic properties. Both offices routinely exchange geospatial data regarding inventories. GIS data is also shared with subcontractors and other SOI-qualified archaeologists when requested.

Protecting Historic Properties

Within the last three years, changes in program needs has brought more oversight to both campuses. Additional emphasis is being placed on educating staff about historic properties based on lessons learned and lack of awareness surrounding the importance of cultural resources.

The 110 program is now more comprehensive. With the federal government's purchase of additional land on the Richland Campus, Section 110 activities now include campus-wide historic properties as opposed to just sites on the Preservation Designated Area.

PNSO routinely consults with SHPO and tribal consulting parties on undertakings occurring on the PNNL Richland and Sequim campuses. For any undertaking that has a ground-disturbing component, Tribes receive notifications inviting them to participate in monitoring. Tribes are also invited to PNNL's annual Section 110 monitoring on the Richland Campus. PNSO also engages in monthly

meetings with the WA SHPO's office and Tribes associated with the Richland Campus. One persistent agenda item in these meetings is future PNNL activities that may affect historic properties. These meetings allow consulting parties to inform PNSO/PNNL of potential unknown historic properties within proposed APEs prior to the commencement of work, and PNSO/PNNL to keep consulting parties up to date on current activities. PNSO also meets with the Jamestown S'Klallam on at least an annual basis to discuss plans for the upcoming year and to go over the previous years' activities.

The site has executed numerous Memorandum of Agreements for ongoing development and research projects. As previously stated, a MOA was signed with consulting parties in 2018 as part of the Richland Campus Future Development undertaking. The MOA addresses construction activities and the continued operation and maintenance of existing buildings. Projects cleared under the MOA have resulted in streamlined project reviews and quicker turnarounds for project execution. The Richland Campus is in the process of developing a PA for maintenance and operation activities and a PA for the built environment. Consultation to develop a MOA and PA for the same types of activities as the Richland Campus are ongoing for the PNNL Sequim Campus.

MOAs for research have cleared activities such as installing scientific equipment and collecting sediment samples along the Columbia River. However, because the river corridor is culturally sensitive, exclusion zones preventing research activities to occur have been established to further protect cultural resources. All ground-disturbing activities are monitored by SOI-qualified archaeological staff.

Using Historic Properties

Over the reporting period, there has been a greater emphasis on working with tribes to access their ancestral lands (including traditional cultural places [TCPs]). Through mitigation, DOE contributes to tribal programs for education on sites that are important to their community.

Due to the site's mission, access to some of the buildings on the Richland and Sequim campus are restricted due to the classified nature of the work that is being performed. Because the Richland Campus historic district is a newer designation, the buildings remain closed to the public.

NHPA is the primary law that is adhered to at PNNL, followed by Washington state cultural resources laws. If projects occur off site or in other states, applicable laws are followed in that regard. The appropriate SHPO office is consulted to ensure comprehensive compliance needs. NAGPRA is adhered to if potential human remains or objects of cultural patrimony are identified in any project. Last, NEPA compliance is also followed on a regular basis.

Neither site has considered leasing under Section 111. The leasing of historic buildings is a possibility in both campuses.

Successes, Opportunities and Challenges

PNNL continues to educate lab staff on historic properties for both campuses. The program continues to work with projects and researchers to help understand the definition of historic properties (such as including historic buildings) and to help change the negative mentality around the PNNL cultural resources process. In addition to the trainings, internal and public websites have been established to bring further awareness to historic properties and the PNNL cultural resources program. Brownbags and similar presentations are set to occur on a more regular basis at PNNL

Sequim due to the general lack of awareness with PNNL's permitting program and in particular, historic properties.

As part of mitigation for the Sequim Campus, DOE-PNSO is planning on pursuing a nomination to the National Register of Historic Places for the ancestral S'Klallam village site that was at the-now Sequim campus shoreline location.

Pantex Plant

Introduction

The Pantex Plant is the nation's primary facility for the final assembly, dismantlement and maintenance of nuclear weapons. Consolidated Nuclear Security, LLC (CNS) manages and operates the facility along with the Y-12 National Security Complex in Tennessee under a single contract for the Department of Energy/National Nuclear Security Administration.

Pantex Plant is located in the Texas Panhandle in Carson County, north of U.S. Highway 60. The Plant is 17 miles northeast of downtown Amarillo, and consists of approximately 12,000 acres owned by the DOE, and 5,800 acres owned by Texas Tech University and leased by the DOE as a safety and security buffer. Pantex Plant is in the Southern High Plains region of the Great Plains at an elevation of approximately 3,500 feet. The topography at Pantex Plant is relatively flat, characterized by grassy plains, cultivated cropland, and six natural playa basins. Playas are shallow ephemeral wetlands, less than one-half mile in diameter that receive the area's rainfall runoff.

The Pantex Plant began as the Pantex Ordnance Plant during World War II, and its construction was authorized on February 24, 1942. Pantex Ordnance Plant was a "second wave" ordnance facility, the last of 14 bomb-loading facilities built under the government-owned/contractor- operated (GOCO) system. The Plant produced 105-millimeter artillery shells, 500-pound general-purpose bombs, 250-pound general- purpose bombs, and 23-pound fragmentation bombs. Pantex Ordnance Plant was a relatively small cog in the GOCO wheel of industrial mobilization during World War II. At the height of its WWII activity, the Plant employed 5,254 employees, of whom 60 percent were female. The Plant covered approximately 16,000 acres, and had three operational bomb-loading lines; a fourth line was completed just before the war ended, but was never operational. An ammonium nitrate line, a bomb fuse and booster line, three large complexes for explosives and ammunition storage, a shop and maintenance area, a cafeteria, a hospital, two large dormitories, a sewage treatment plant, and a water-softening plant supported the Plant's bomb-loading mission. Pantex Village, which consisted of 69 residences, a community center, a store, and a movie theater, provided housing for many workers and their families.

The Pantex Ordnance Plant was closed after the end of WWII. This closure involved removal of the production equipment and decontamination of the remaining facilities. In 1949, the 16,000-acre installation was sold for one dollar, subject to recapture under a national security clause, to Texas Technological College (now Texas Tech University) for use as an agricultural experiment station.

The Cold War era of operations at Pantex began in 1951. The Atomic Energy Commission selected the former ordnance plant for use as a high explosives fabrication and weapon assembly installation in the nation's developing nuclear weapon complex. The AEC obtained approximately 7,000 acres of the original plant site from Texas Technological College, and the college retained the remainder of the land. The AEC used $25 million to construct ten new buildings and modify three World War II-era buildings. These efforts were concentrated primarily on facilities in the previously unused fourth load-line (now Zone 12). The first contractor after the reopening on Pantex was Proctor and Gamble Defense Corporation. Expanding operations in 1955 required the acquisition of an additional 2,000 acres of land from Texas Technical College.

Throughout the Cold War, Pantex served as a major component of the nuclear weapon production complex, enabling the National Laboratories to focus on research and design of new nuclear weapon systems. At the height of U.S. production of nuclear weapons, there were four assembly, disassembly, and modification facilities, all run by Mason & Hanger--Silas Mason Company, Inc.; the Pantex Plant near Amarillo, Texas; the Iowa Army Ammunition Plant in Burlington, Iowa; the Medina Modification Center in San Antonio, Texas; and the Clarksville Modification Center in Clarksville, Tennessee. As the AEC began to reduce the production of weapons in the mid-1960s, it transferred responsibilities of the two modification centers back to the Pantex and Burlington Plants. Transition of Clarksville operations, the smaller of the two, was completed in September 1965, and transition of Medina operations in July 1966. On June 25, 1973, the AEC decided to consolidate Burlington and Pantex operations. The complete shutdown of the nuclear weapon activity at Burlington was completed in July 1975. Since 1975, Pantex has been the nation's primary assembly, disassembly, retrofit, and modification center. In 1975, the Energy Research and Development Administration (ERDA) replaced the AEC and took responsibility for operation of Pantex Plant; and in 1977, the ERDA was replaced by the Department of Energy. A reorganization in 2000, shifted responsibility for operation of Pantex to the National Nuclear Security Administration, a semi-autonomous administration within the DOE.

Pantex Ordinance Plant Sign from 1963

Pantex Plant personnel completed an inventory of pre-Cold War buildings and archeological sites by 1995. Staff also contacted American Indian Tribes regarding interest in the archeological sites at Pantex. There are no known archeological sites at Pantex which contain human remains, funerary objects or objects of cultural patrimony. If such items were found, Pantex would consult with identified Tribes having traditional, cultural, or religious interest in the Texas Panhandle.

Identification and evaluation work for Pantex's Cold War context was completed in 2001, including building surveys, archival research, development of Revision I draft Cold War context statement, and National Register eligibility determinations for the Plant's approximately 700 buildings and structures. In 2004, representatives from the National Nuclear Security Administration, Texas State Historic Preservation Office, the Advisory Council on Historic Preservation, and the Managing and Operating Contractor for Pantex Plant, signed the Programmatic Agreement for managing cultural resources at Pantex Plant. Section 106 compliance reviews are integrated with the National Environmental Policy Act (NEPA) review process. Any project which would adversely affect properties identified in the Programmatic Agreement for in-situ preservation would require consultation with the Texas SHPO and ACHP.

The Pantex mission has grown over the decades as other facilities closed and responsibilities for life-extension, surveillance, assembly and high explosives operations were moved to the site. All work at Pantex is carried out under three overarching priorities: the safety and health of workers and the public, the security of weapons and information, and the protection of the environment.

Identifying Historic Properties

In 2001, identification of cold war eligible properties was completed. The Pantex Plant Cultural Resource Management Plan outlines the process for identifying and evaluating historic properties. Properties eligible for inclusion on the National Historic Register must fit within the following preservation themes: fabrication of high explosive components, nuclear weapons assembly/disassembly, high explosives development, surveillance testing and evaluation of nuclear weapons. The Pantex Programmatic Agreement identified ten structures representing these themes to be preserved in-situ. The ten properties must be continuously used and all modifications must not adversely affect the historical integrity of the facility. The remaining 168 eligible facilities were documented according to stipulations agreed to in the Pantex Programmatic Agreement. The approximately 483 remaining facilities were determined to be ineligible the National Historic Register. There have been no changes to the number of eligible or ineligible facilities since 2004. Cultural resources staff continue to digitize photographs, drawings, and reports about the historic facilities on site.

Protecting Historic Properties

Over the last three years, Pantex compliance with Sections 106 and 110 have been unchanged. Compliance with the National Historic Preservation Act is integrated with the NEPA review process. The Pantex Plant utilizes a Programmatic Agreement to ensure compliance with the National Historic Preservation Act. During the reporting period from 2017-2020, 168 projects were reviewed for impacts to cultural resources. No project was identified having adverse effects to historical properties. All of the historical properties determined as eligible for the National Historic Register but not identified for in-situ preservation have been documented according to Stipulations in the Programmatic Agreement. This allows for the decommissioning and demolition of those facilities if the properties are determined excess. This ensures a balance between preservation of historical properties and Plant needs.

Using Historic Properties

The nature and the location of the Pantex Plant site does not allow for local economic development.

Pantex uses directives from NNSA and DOE in order to decide what facilities to demolish or to continue to use. Existing agreements with SHPO ensure certain facilities are retained unless consultation occurs.

Pantex Plant has not utilized Section 111 of the NHPA or other authorities to lease or exchange historic properties.

Successes, Opportunities and Challenges

During the past three years, cultural resources staff has successfully cataloged the historical archive collection. The documents in the historical archive collection contain manuals, correspondence, drawings, reports, maps, and photographs. Staff digitized over 300 photographs and negatives and 80 were included in the history display at the John C. Drummond Center. The artifacts are stored using archive safe materials in a facility meeting the

History Display, July 2020.

requirements of 36 CFR 79.9. In addition, cultural resources staff have entered over 3,000 objects into the Cultural Resource Management database. This has enabled staff to locate objects and reports quickly without the need to spend hours searching through paper files. Pantex personnel have added to the historic record by providing additional information about the photographs such as the names of personnel in the photographs. From this effort of digitizing and cataloging archival materials, cultural resources and communications staff utilized negatives to produce a new history display. The display uses photographs to interpret the history of Pantex form 1942-Present in an area accessible to all Pantex staff and visitors.

Portsmouth Gaseous Diffusion Plant

Introduction

The Portsmouth Gaseous Diffusion Plant (PORTS) was a Cold War project of the Atomic Energy Commission, the predecessor of the U.S. Department of Energy. PORTS is approximately a 3,700 acre site located outside of Piketon, Ohio, a small community located in southern Ohio. PORTS is one of three gaseous diffusion plants in the DOE complex. All of the gaseous diffusion plants have been shut down and are undergoing cleanup, including decontamination and decommissioning (D&D) as a part of the Environmental Management Program; PORTS was permanently shut down in 2001. The site is actively undergoing cleanup under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and other authorities.

Identifying Historic Properties: All of PORTS historic properties were identified prior to 2017. PORTS has 33 architectural historic properties and three extant archaeological historic properties. A fourth archaeological site was identified and recovered in 2015 as a part of the site cleanup. The site does not have any heritage assets. PORTS has worked closely with members of four American Indian Tribes that were removed from Ohio to Oklahoma as a result of the Indian Removal Act. Representatives of the four Tribes, including Tribal Historic Preservation Officers and Tribal leaders, met with DOE PORTS leadership beginning in 2012. The Tribes assisted PORTS with the evaluation of historic properties and the identification of measures to avoid and also mitigate adverse effects that would occur due to site cleanup. This working relationship, a type of partnership, with the Tribes was beneficial to the PORTS cleanup alternative analysis and decision-making process.

Protecting Historic Properties: As a cleanup and closure site undergoing D&D, protecting the site's historic properties by preserving them was not possible, rather a number of mitigation measures to document the site's history have been and will continue to be implemented. The substantive requirements of Section 106 were met using the Applicable or Relevant and Appropriate Requirements (ARARs) process of CERCLA, culminating in two 2015 Records of Decision (RODs). The RODs – one to address the process buildings and one to address waste management needs - were executed between DOE and the State of Ohio. Beginning in 2011, DOE coordinated with the State Historic Preservation Office, the Advisory Council on Historic Preservation, American Indian Tribes, and members of the public through the CERCLA process. Pursuant to the Process Buildings ROD, the site's facilities will be demolished. The separate 2015 ROD to address waste management included mitigation measures associated with site archaeology, including a measure to recover an archaeological site that could not be avoided to accommodate an on-site waste disposal facility. A Memorandum of Agreement was not signed (because it is administrative), but a robust series of preservation commitments was included in the RODs entered into between DOE and the State of Ohio.

As described above, DOE PORTS used the CERCLA process and its strong public involvement component to engage with the public and the American Indian Tribes. The success of this method is recognized in the RODs that captured the mitigation measures and obtained support from the SHPO and the Native American Tribes. There was integration of the substantive aspects of NHPA directly

into the CERCLA analyses as the analyses were underway. Through the use of the CERCLA process for NHPA Section 106 compliance, DOE PORTS was able to successfully balance the need to protect the public with the NHPA goal of protecting historic properties.

Using Historic Properties: While PORTS is aware of heritage tourism objectives and available sites for such tourism in southern Ohio, the buildings at the PORTS site will be demolished to address environmental contamination and associated risks and hazards. Bus tours will continue to be offered in the spring and summer months as a heritage tourism opportunity as long as site conditions allow.

Identifying Historic Properties

PORTS has a total of 37 historic properties. They are comprised of 33 structures and four archaeological sites. 100% of the PORTS real property – for both archaeology and architecture – has been surveyed as of 2012; all sites have been previously identified. Of the 33 structures, four have been demolished, with the balance to be demolished as a part of site cleanup and closure. One of the archaeological sites was recovered in 2015; the other three are extant. All of the surveys were performed by professional archaeologists and/or architectural historians and have been provided to both the State of Ohio and the Advisory Council and the site's consulting parties. There are no heritage assets at PORTS.

PORTS has completed all surveys prior to the past three years. The final survey was completed in 2016 (an easement, not on land owned by DOE) and was performed to satisfy the requirements of Section 110 of the NHPA. The results of the survey will be used to support future CERCLA actions, should they occur.

PORTS has worked closely with members of four Shawnee Tribes that were removed from Ohio to Oklahoma as a result of the Indian Removal Act. Representatives of the four Tribes, including Tribal Historic Preservation Officers and Tribal leaders met with DOE PORTS leadership on several occasions beginning in 2012. The Tribes assisted PORTS with the evaluation of historic properties and the identification of measures to avoid and also mitigate adverse effects that would occur due to site cleanup. DOE identified the four prehistoric archaeological sites pursuant to Section 110 of the NHPA in support of site cleanup under CERCLA.

Protecting Historic Properties

The PORTS site mission is cleanup, the majority of which is being conducted under CERCLA. DOE PORTS has one part time cultural resource employee and the equivalent of one part time employee through contractor support. DOE PORTS has performed its Section 110 archaeological surveys that occurred between 2011 and 2014 as part of the site characterization aspect of CERCLA. The information was used to support siting studies for waste management disposal options on site. Section 106 was performed using the ARAR process of CERCLA wherein the substance of regulatory requirements are done, but not the administrative. Consultation occurred as part of the greater public involvement process that occurs under CERCLA. DOE coordinated with the SHPO, the ACHP, tribes, and members of the public through the CERCLA process. The parties were integral in helping DOE identify alternatives for avoidance, minimization and mitigation of adverse effects to historic

properties. No MOA was signed (because it is administrative) but a robust series of preservation commitments was included in the RODs entered into between DOE and the State of Ohio. The two PORTS CERCLA RODs are enforceable agreements and are the decision documents that contains the means of NHPA compliance.

The ARARs process of CERCLA was designed to streamline cleanup decision-making so that improvements to human health and the environment can be realized sooner. Rather than waiting for permits to be obtained and executed, or NHPA MOAs to work through a lengthy consultation and negotiation process, the CERCLA process and its documents are used. The process is public and in the case of NHPA is not limited to a group of consulting parties but instead seeks broader public involvement in a process that tracks along as a part of CERCLA. CERCLA calls for alternatives analysis as does NHPA, and the cardinal aspects of NHPA – avoidance, minimization or mitigation of adverse effects – are conducted through CERCLA. PORTS found that the use of the CERCLA ARARs process for NHPA compliance streamlined both the identification of historic properties, the consideration of alternatives to avoid historic properties where PORTS is aggressively working through the mitigation measures identified in the RODs which include, but are not limited to, a Virtual Museum (established with periodic updates), the development of a Historic Context Report on the site (completed), and preparation of Historic American Engineering Reports for seven unique historic properties on the site. PORTS is undergoing cleanup for eventual closure and cessation of DOE EM activities. Some DOE Legacy Management activities will remain to assist with management of an on-site waste disposal facility. DOE intends to transfer the land at PORTS for economic development purposes. All of the buildings have been identified for demolition as a part of cleanup. Transfer of the property that contains the three remaining archaeological sites would include deed restrictions to be followed by a transferee, as called for in 36 CFR 800.5(a)(2)(vii).

PORTS has worked closely with members of four American Indian Tribes that were removed from Ohio to Oklahoma as a result of the Indian Removal Act. Representatives of the four Tribes, including Tribal Historic Preservation Officers and Tribal leaders, met with DOE PORTS leadership beginning in 2012. The Tribes assisted PORTS with the evaluation of historic properties and the identification of measures to avoid and also mitigate adverse effects that would occur due to site cleanup. DOE identified the four prehistoric archaeological sites pursuant to Section 110 of the NHPA in support of site cleanup under CERCLA. This working relationship is a type of partnership.

PORTS has a site cultural resource guidance memorandum for the protection of the historic archaeological sites that will not be affected by cleanup. A program alternative to Section 106 is available to sites/projects implementing actions under CERCLA that can expedite the identification and protection of historic properties.

Using Historic Properties

DOE's buildings and structures, including its (architectural) historic properties will be demolished as a part of cleanup pursuant to a CERCLA ROD. The site plans to transfer land in the future for economic development. PORTS offers bus tours in the summer months; approximately 300 people visit the

site on these tours annually. DOE PORTS also has a Virtual Museum (www.PORTSVirtualMuseum.org) that averages approximately 4,500 "hits" annually.

The ARARs process of CERCLA was designed to streamline cleanup decision-making so that improvements to human health and the environment can be realized sooner. Rather than waiting for permits to be obtained and executed, or NHPA MOAs to work through a lengthy consultation and negotiation process, the CERCLA process and its documents are used. The process is public and in the case of NHPA is not limited to a group of consulting parties but instead seeks broader public involvement in a process that tracks along as a part of CERCLA. It is not a separate process that can result in cleanup delays. CERCLA calls for alternatives analysis as does NHPA, and the cardinal aspects of NHPA – avoidance, minimization or mitigation of adverse effects – are conducted through CERCLA. PORTS found that the use of the CERCLA ARARs process for NHPA compliance streamlined both the identification of historic properties, the consideration of alternatives to avoid historic properties where feasible, and the identification of mitigation efforts in coordination with tribes and members of the public enabling a very robust set of mitigation measures to be included in the CERCLA decision documents. DOE PORTS completed the recovery of an archaeological site (as agreed to in a ROD) in 2015 and will curate its collection. With regard to architectural historic properties, DOE PORTS is aggressively working through the mitigation measures identified in the ROD which include, but are not limited to, a Virtual Museum (established and updated periodically), the development of a Historic Context Report on the site (completed), and preparation of Historic American Engineering Reports for seven unique historic properties on the site.

Successes, Opportunities and Challenges

Notable accomplishments since 2017 include the development and transmittal of the summary-level report of the phase III data recovery of an archaeological site; the Virtual Museum updates; the drafting of HAER reports for seven PORTS facilities; the drafting of reports based on the content requirements of the Historic American Building Survey for 26 site facilities; monthly panoramic photo-documentation of site D&D progress; and the continuation of outreach and communication activities such as site bus tours during the spring and summer months; and presentations to local groups and gatherings on site history that include showing items from PORTS' operational period. DOE is also working towards a determination on the location of the site's archaeological collection from the prehistoric and historic-era, and the curation of the site's collection at the selected facility. A copy of the prehistoric and historic-era reports can be obtained at the DOE Environmental Information Center by contacting 740-289-8898 or at portseic@ports.pppo.com. Additionally, an electronic copy can be found at https://www.energy.gov/pppo/downloads/national-historic-preservation-act-documents-portsmouth.

Northwest corner of the X-326 Process Building, facing southeast. Building to be included in the HAER Reports.

Looking north at the X-326 Process Building, December 16, 1953. Building to be included in the HAER Reports.

Sandia National Laboratories

Introduction

The Department of Energy/National Nuclear Security Agency/Sandia Field Office (DOE/NNSA/SFO) oversees cultural resources management for all Sandia National Laboratories (SNL) activities and sites. SNL occupies DOE-owned or -permitted property at its laboratory sites in Albuquerque, New Mexico and Livermore, California, and at its test sites near Tonopah, Nevada and Kauai, Hawaii.

SNL has its roots in Z Division, the nuclear weapons ordnance design, testing, and assembly organization established within Los Alamos in 1945. Later that year, Z Division moved to Sandia Base (which later merged into Kirtland Air Force Base) to be near an airfield and work closely with the military. The demand for a large, war-reserve nuclear stockpile in the early years of the Cold War drove staff increases at both Z Division and Los Alamos, ultimately leading to their separation. In May 1949, President Harry Truman asked the American Telephone and Telegraph Company (AT&T) "to render an exceptional service in the national interest" by operating SNL. AT&T agreed, and the newly formed Sandia Corporation, a wholly owned subsidiary of AT&T's partner Western Electric Company, began managing SNL on November 1, 1949.

SNL continued to evolve, establishing a second site in Livermore, California and test ranges in Tonopah, Nevada, and Kauai, Hawaii. Sandia's mission expanded over the decades as it took on fundamental research and non-nuclear assignments, including energy research and anti-terror programs. In 1979, President Jimmy Carter signed legislation declaring Sandia a national laboratory. In 1993, Martin Marietta (which later merged with Lockheed Corporation to form Lockheed Martin) assumed responsibility for Sandia Corporation and managed the Labs until May 2017, when management of SNL was transferred to National Technology & Engineering Solutions of Sandia, a wholly owned subsidiary of Honeywell International.

SNL currently fields a workforce of over 14,000 individuals, most of whom work at the New Mexico site. SNL's long-term mission responsibilities in the nuclear weapons program created a foundation from which capabilities are leveraged to solve complex national security problems for a variety of sponsors. As a multidisciplinary national laboratory and Federally Funded Research and Development Center, SNL anticipates and resolves emerging national security challenges, develops and discovers new technologies, creates products that directly address national security needs, and informs the national debate where technology policy is critical to preserving security and freedom. SNL's areas of expertise include bioscience, computing and information science, engineering, geoscience, materials science, nanodevices and microsystems, radiation effects and high energy density science, environmental testing, and satellite systems.

In consultation with the State Historic Preservation Officers of New Mexico, California, Nevada, and Hawaii, SFO undertakes all SNL cultural resources management. The SNL Facilities Information Management System (FIMS) identifies 1086 total properties at the four SNL sites. Of these, 96 have been determined National Register Eligible and 182 not eligible by SFO in consultation with the relevant SHPOs. 808 properties have not been evaluated. Details of the activities at the individual sites are provided in the Three-Year Progress Overview, below.

Along with the managing the built environment, SFO also manages archaeological resources and concerns regarding traditional cultural properties at the New Mexico, Nevada, and Hawaii sites.

SNL/NM is situated on KAFB, on the Albuquerque East Mesa, which is located in the eastern portion of the Albuquerque-Belen Basin overlooking the Rio Grande River. Elevation on KAFB ranges from 1,878 to 2,255 m (6,160 to 7,400 ft).

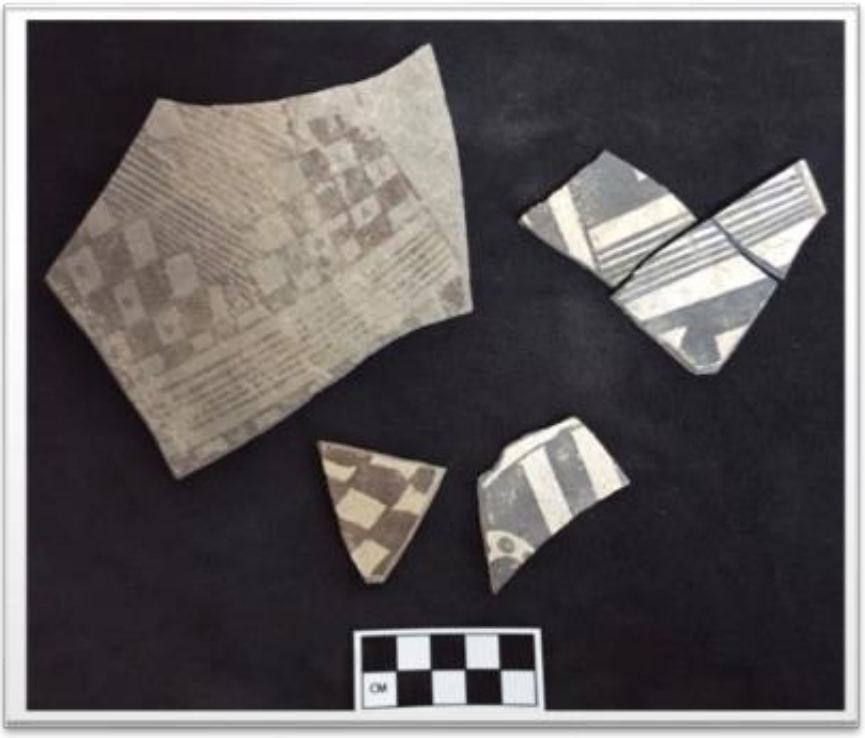


Figure 1: Socorro black on white sherds identified during pedestrian survey at SNL/NM.

The prehistory and history of the Albuquerque area consists of four major cultural and temporal periods—Paleoindian, Archaic, Ancestral Puebloan, and Historic. So a prehistoric time frame ranging between 10,000 BC to AD 1540 and a historic period ranging from AD 1540 to the present.

SNL/CA

In the early 20th century, the prehistory of the region was virtually unknown, aside from a small amount of ethnographic data and the discovery of a few prehistoric sites at the southern end of the San Francisco Bay. There is evidence, however, for an in-place forager economic pattern, beginning around 8000 B.C.E., followed by a series of five cycles of change that began at approximately 3500 B.C.E., Spanish period (1769 – 1821) , Mexican period (1821 – 1846) and the American period, the area was located within mostly ungranted lands. An 1869 Plat Survey shows the northwest corner of the property as part of Rancho Las Positas. SNL/CA may have been intersected by part of the El Camino Viejo (the Old Road) as a portion of the route followed Arroyo Seco. No structures from the Hispanic era have been recorded on site.

No prehistoric Native American sites have been recorded in the area now occupied by SNL/CA. The nearest prehistoric sites to SNL/CA are located approximately 2 miles south of the property along Arroyo Mocho. SNL/CA is located within the Chochenyo territory of the Costanoan Indians (or Ohlone). There are no known ethnographic resources at the site.

SNL/TTR

Over the years, a number of alternative cultural frameworks have been proposed for southern Nevada. The prehistoric period covers the time of the earliest documented human occupation of the area (ca. 13,000 B.P.) until the earliest European exploration of the area (ca. A.D.1600) even though there are a number of alternative cultural frameworks for southern Nevada, this is the framework

SNL currently follows. This period is divided into six periods: Lake Mohave (12,000–7000 B.P.), Pinto (7500–4000 B.P.), Gypsum (4000 B.P.– A.D. 400), Saratoga Springs (A.D.400–1150), Late Prehistoric (A.D. 1150–1600), and Protohistoric (A.D. 1600–ca. 1830).

SNL/KTF

Much of the present knowledge regarding traditional land use patterns is based on what was recorded at the time of, and shortly after, western Contact. Early records (such as journals kept by travelers and missionaries), documented Hawaiian traditions that survived long enough to be written down and archaeological investigations have assisted in understanding the past. Kaua'i consisted of six moku; Kona, Puna, Ko'olau, Halele'a, Napali, and Waimea (Moffat and Fitzpatrick 1995:23). Further traditional land divisions within the moku were ahupua'a, the latter which ideally incorporated all the natural resources necessary for traditional subsistence strategies. KTF is located in the ahupua'a of Waimea, which was in the Kona district. The traditional and historical setting at KTF consists of three major periods: Pre-Contact Period (Pre -1778) to Early Historic Period (post – 1778), Contact (to 1850), Māhele – During the mid- 1800s.

SFO has not had an opportunity to engage in external/private partnerships regarding SNL resources. The security limitations placed on access to the facilities and the remote locations of many of them have discouraged interest in such partnerships. Similarly, the possibilities inherent in Section 111 have not been investigated. Access to facilities is limited to individuals pre-identified as having a need and, in the case of test facilities, safety is a primary concern.

Identifying Historic Properties

SFO's approach to cultural resources management of the built environment has not changed significantly over the course of FY2017–FY2020. Emphasis is placed on Section 106 compliance, although some progress has been made in consultation under Section 110. SFO has one individual devoted to SNL cultural resources activities as part of the overall National Environmental Policy Act compliance process. This poses a challenge as the amount of Section 106 activity has increased with increased funding for maintenance work on SNL facilities. SNL does deliver some support for SFO's Section 106 and Section 110 compliance activities—the SNL historian provides assessments and recommendations regarding historic buildings.

SFO's approach to management of archaeological resources has changed considerably. Since FY2017, SNL has hired one full-time archaeologist to support compliance activities. The archaeologist reviews proposed outdoor activities through the NEPA process, as well as through notifications conducted via an internal ticketing process for ecological reviews. The archaeologist uses information from previously conducted surveys, as well as conducting new surveys to identify possible archaeological concerns. Similar to the SNL historian, the SNL archaeologist supports SFO's Section 106 and 110 compliance activities by providing assessments and recommendations regarding archaeological resources.

In FY2018, SFO hired one person to take over management of the cultural resources program, as well as assist with other environmental programs. Previously the NEPA Compliance Officer was the only person at SFO doing management of cultural resources along with many other duties.

The locations and National Register eligibility determinations are maintained on multiple electronic systems. The New Mexico, Nevada, and Hawaii SHPOs maintain their own electronic databases of

the locations of surveys and assessments, identified resources, and eligibility determines. The SNL historian and archaeologist provide input to these systems and access the information as needed for new reviews and reports. SNL also maintains internal GIS databases with the locations and eligibility determinations of both historic and archaeological resources. These GIS databases allow the SNL historian and archaeologist to quickly and easily view areas that have been assessed for cultural resources, and resource eligibility determinations when reviewing new proposals through the NEPA process. The historic building GIS database is maintained by the SNL Facilities Division, and eligibility is integrated into the FIMS to assist with Facilities project and maintenance planning. The SNL records management group maintains the reports as official records.

Sandia National Laboratories/New Mexico (SNL/NM)

SNL/NM operates primarily within KAFB. Although there are a few DOE-owned buildings on DOE land outside of the KAFB boundaries, the bulk of the land and built environment SFO oversees is within the base. Within KAFB, SNL/NM has five tech areas on DOE-owned land; additional facilities on DoD-owned land; and facilities on land withdrawn from Cibola National Forest, part of which is permitted to DoD and part to DOE.

The SNL FIMS lists 748 total properties at SNL/NM. Of these, SFO has determined 46 to be National Register Eligible, 1 to be a non-contributing element to historic districts, and 74 to be not historic. NM SHPO has concurred with these determinations. 627 properties have not been evaluated by SFO.

In 2010, SNL undertook a historic building survey and assessment of the SNL/NM site. Consultation on the resulting report and recommendations was not completed, although the document does continue to support Section 106 consultation on specific buildings.

Figure 2: Projectile point identified during pedestrian survey at SNL/NM

The SNL archaeologist has undertaken pedestrian surveys in support of proposed projects throughout the SNL/NM site. In general, where archaeological sites are identified, construction is relocated or modified to avoid threatening the sites. In some areas, archaeological monitoring has been conducted during outdoor activities where there was the possibility of subsurface cultural deposits.

During FY2020, the SNL archaeologist excavated one feature out of a dirt road that was threatened by use of the road as well as erosion.

Sandia National Laboratories/California (SNL/CA)

SNL/CA was established in 1956 to provide nuclear weapon design support to the newly established Lawrence Livermore Laboratory. Over time, the site has expanded its capabilities into research on energy resources—including understanding combustion and the development of biofuel—transportation, immigration, port security, and cyber research. Many of the issues addressed at the site surfaced early in the state of California, allowing SNL/CA to participate in the first wave of solutions to important national problems.

A 1990 assessment of cultural resources at SNL/CA revealed no prehistoric resources, Native American resources, or historic archaeological sites. As there is always a possibility that buried

resources might be unearthed, all construction-related activities operate under a provision for discovery of cultural resources. None have been unearthed at the site.

SNL undertook a historic building survey and assessment of the SNL/CA site in 2001. SFO determined that none of the properties on site were historic. In April 2005, CA SHPO concurred with SFO's determination. In 2005, SNL/CA released a site-specific Cultural Resources Management Plan, under which it still operates.

There has been no cultural resources activity at SNL/CA in the FY2017–FY2020 period. The SNL FIMS indicates there are 113 total properties at the SNL/CA site. Fourteen of these were not included in the 2001 assessment (they represent new construction); thirteen properties have been removed.

Sandia National Laboratories/Tonopah Test Range (TTR)

TTR is located on approximately 280 square miles (179,200 acres) of withdrawn land, which is permitted from the U.S. Air Force (USAF) within the boundaries of the Nevada Test and Training Range (NTTR). The original USAF permit was issued in 1956 and SNL began testing at the site in 1957. In general, SNL's activities at TTR involve research and development and the testing of weapon components and delivery systems. Initial testing was devoted to aircraft drops of test units for nuclear weapons designs and rocket testing of components and rockets developed in support of high-altitude nuclear testing. Over time, the range added explosives tests and gun testing, all with advanced tracking and data capture capabilities.

Figure 3: Askania camera tower at TTR.

TTR's built environment currently includes 116 total buildings and structures. In 2005, SNL undertook a complete historic building survey and assessment… The assessment concluded with the recommendation that 59 properties be included in an SNL TTR Historic District. SFO, in consultation with the Nevada SHPO, determined that the district would include 60 properties as contributing elements.

In FY2017–FY2020, SNL proposed to demolish several buildings and structures from the SNL TTR Historic District—both contributing and non-contributing elements. SFO and NV SHPO are working to finalize the wording of a Programmatic Agreement regarding the district. In the meantime, HABS/HAER Level II-type reports have been drafted for the contributing elements proposed for demolition. NV SHPO has not yet offered final approval of the reports. In the meantime, SFO has continued to conduct individual Section 106 consultations with the NV SHPO for building renovations and earth disturbing activities.

In FY2020, SFO coordinated with the Nevada SHPO and Advisory Council on Historic Preservation to do emergency maintenance of a building critical to health and safety at TTR.

During the same year, SFO notified the Nevada SHPO and ACHP of a violation of the National Historic Preservation Act. The violation consisted of the demolition of a National Register eligible tower that contributed to the TTR Historic District, as well as demolition of one structure of undetermined eligibility. The demolitions took place prior to the completion of the Section 106 process and mitigation of adverse effect.

Beginning in FY2020, SNL has begun to update the historic building survey and assessment for this site. As part of this effort, new photographs were taken.

Archaeological surveys are conducted at TTR as needed to support specific mission activities. In the past three years, work has included surveys in support of road paving and the installation of new structures.

Sandia National Laboratories/Kauai Test Facility (KTF)

KTF is located on the island of Kauai within the boundaries of the U.S. Department of Defense (DoD) Pacific Missile Range Facility (PMRF). KTF is at the north end of the PMRF. In the past, KTF also operated remote facilities on Mount Haleakala on Maui and at Kahili Point on Kauai, but those facilities have not been used in several years. The facilities at KTF include 97 properties, 3 of which have been evaluated and determined not to be historic.

KTF was established in 1962 to launch telemetry rockets in support of the high-altitude shots during the Operation Dominic nuclear test series. KTF was expanded and renovated in 1964 as part of the U.S. Readiness Program, a safeguard established by Congress in response to the Limited Test Ban Treaty (LTBT) of 1963 signed by the U.S., the U.K., and the U.S.S.R. The LTBT banned all nuclear testing in the atmosphere, space, and the seas. Congress provided certain safeguards, one of which allowed the U.S. to maintain the facilities and research capabilities (the readiness) necessary to resume atmospheric testing in the interests of national security. The Readiness Program ended in the late 1970s; however, President Ronald Reagan's Strategic Defense Initiative (SDI) led to the modernization of KTF in the 1980s and 1990s. KTF continued to provide rocket launches for testing rocket systems with scientific and technological payloads, advanced development of maneuvering reentry vehicles, and scientific studies of atmospheric and exoatmospheric phenomena. KTF currently supports Missile Defense Agency and other agency programs.

The KTF launch field was originally designed to accommodate 40 launchpads, but only 15 pads were constructed. Of these, 11 have had their launchers removed and two additional launchpads were constructed over time. In addition to rocket launchpad sites, KTF facilities include missile and payload assembly buildings, launch operations and data acquisition facilities, maintenance shops, and a trailer dock compound for administration and other office processing.

During the FY2017–FY2020 period SFO conducted Section 106 consultation with the HI SHPO, Native Hawaiians, and the State of Hawaii for the demolition of multiple structures on Mount Haleakala. The structures were determined to be not eligible, however, some mitigative actions were implemented during demolition due to other cultural concerns. Based on HI SHPO guidance, SNL always has an archaeologist present during ground disturbing activities (digging, trenching, removal of buildings, and installation of buildings).

In all, there are 97 properties at KTF, 3 of which have been evaluated and consultation with HI SHPO completed. None have been determined National Register Eligible.

Regarding policies that promote awareness of historic properties over the last three years, outreach and public education efforts have been limited. However, SNL has created a new cultural resources website at https://www.sandia.gov/about/history/hb. The site currently holds information about historic buildings that have been documented and demolished. Archaeological information will be included on this site in the future.

SNL also includes the historic status and roles of properties when discussing specific facilities and programs. For example, the public can see some of SNL's key facilities via Virtual Tours. The history of the facilities—and whether they have been determined eligible for the National Register of Historic Places—is called out in the text boxes describing the facilities. Tours of the historic Z Machine, the Superfuge Facility, and other environmental test facilities are viewable on the SNL external web at tours.sandia.gov. This is an ongoing project for new hire training and recruiting; more tours will be added in the coming fiscal years.

Protecting Historic Properties

In addition to the discussion above, SNL has implemented improved processes for ensuring that proposed building modifications, renovations, upgrades, and additions are all captured and reviewed for appropriate consultation. New electronic tools inform project managers when they are dealing with a historic property or one that has not been previously evaluated and direct them to the NEPA process for follow-through.

Figure 4: Historic building in Tech Area I at SNL/NM.

During Section 106 and Section 110 compliance activities, SFO has engaged with local American Indian Tribes, Native Hawaiian organizations, and certified local governments, as well and US Forest Service to identify cultural resources of concern and development open communication for the treatment of these resources and sharing of information. These discussions happen in person, over the phone, via email, and through formal consultation. In addition, SFO works closely with onsite Department of Defense counterparts to coordinate the management of cultural resources. During the FY2017-FY2020 period, SFO entered into several Memoranda of

Agreement with both the NM and NV SHPOs for individual undertakings with adverse effects. Programmatic Agreements with more streamlined requirements and reviews are being pursued with both SHPOs, however, those agreements are not yet finalized. For SNL/NM, the Programmatic Agreement will initially focus on maintenance activities. Those activities make up the majority of Section 106 consultations for the NM site. At TTR, the Programmatic Agreement is being developed to include all activities that may occur within the historic district.

Using Historic Properties

Decisions regarding the continued use or re-use versus disposition of a historic building often come down to safety considerations and financial investments. Several of the historic buildings are in a condition such that renovation of the building to meet current safety codes, and well site safety and security requirements would require substantial financial investment beyond that which is reasonable. Similarly, decisions regarding the implementation of actions that would constitute an adverse effect to a building's historic integrity are undertaken for the improvement of the health, safety, and security stance of the facility.

SFO Real Property Management is conducted by NNSA Headquarters. The use of Section 111 has been considered, however, it is not feasible to the location of almost all SNL properties on Department of Defense installations.

Successes, Opportunities and Challenges

As described above, the hiring of a full-time archaeologist to support work at all SNL sites, has streamlined the project review process as well as further ensuring compliance that is not based on outdated or incomplete archaeological information.

The lack of streamlined reviews through a program alternative such as a programmatic agreement for the NM or NV sites, presents a challenge as it requires more individual consultations, which delay project timelines and potentially threaten funding. Entering into agreements with the relevant SHPOs and ACHP in future years will allow for more simplified management of cultural resources.

Savannah River Site

Introduction

The Savannah River Site (SRS) is a 310-square mile Department of Energy industrial complex located in the Sandhills region of South Carolina. It encompasses parts of Aiken, Barnwell and Allendale counties and is bordered on the west by the Savannah River and Georgia. Operated by Savannah River Nuclear Solutions (SRNS) and its partners under contract to the Department of Energy Savannah River Site (DOE-SR), SRS processes and stores nuclear materials in support of national defense and U.S. nuclear nonproliferation efforts. The Site also develops and deploys technologies to improve the environment and treat solid and liquid nuclear and hazardous wastes left from the Cold War.

In addition, a semi-autonomous DOE entity, the National Nuclear Security Administration - Savannah River Site Office (NNSA-SRSO), oversees the tritium production complex in H Area. The need for tritium formed the genesis of the Site in 1950 and with its subsequent history of flexible engineering and design the Site also produced plutonium and other nuclear materials during the Cold War. The Savannah River Site has built on this legacy and today is the nation's sole tritium producer, creating the radioactive isotope of hydrogen needed for modern nuclear weapons.

The Savannah River National Laboratory (SRNL) and the Savannah River Ecology Laboratory (SREL), operated by the University of Georgia, also occupy research facilities on Site. The SRNL, a multi-program laboratory facility, government-owned and contractor operated, operates as a Federally Funded Research and Development Center (FFRDC). In this capacity, SRNL applies its expertise to a wide range of research and development activities from basic science to applied research to supporting cleanup activities throughout the DOE complex. SRNL is also involved with national security, nonproliferation, homeland security and energy security missions for DOE and other federal agencies. SREL, a research unit of the University of Georgia, has been onsite since 1951, performing basic and applied ecological research studies that inform on a wide range of ecological organizations, from atoms to ecosystems.

Known as the Savannah River Plant (SRP) prior to 1989, SRS produced plutonium and tritium for use in the manufacture of nuclear and thermonuclear weapons during the Cold War. Nine separate industrial process areas - five heavy-water moderated production reactors, two chemical separation areas, a fuel and target fabrication area, and a heavy water production area - were constructed as well as research and development facilities, administrative and support properties, and plant infrastructure. Du Pont, as prime contractor for the Atomic Energy Commission, constructed these facilities and the landscape that enveloped them as an integrated plant between 1950 and 1956. The close of the Cold War ended much of the production mission and many of the original production facilities were shut down or adaptively reused to suit ongoing or new missions. Tritium remains as the Site's production mission.

Preservation at SRS

There are two programs onsite that assist DOE with its cultural resources compliance: the Savannah River Archaeological Research Program (SRARP) and the Cold War Historic Preservation Program (CWHPP).

The SRARP, under the auspices of the South Carolina Institute of Archaeology and Anthropology, handles the Site's compliance for archaeological resources. It serves as a primary facility for the investigation of archaeological research problems associated with cultural development within the Savannah River Valley. The results of which are used to assist DOE in the management of more than 1300 known archaeological sites on the SRS.

The specific elements of the SRARP's compliance, research, and outreach efforts are identified within a cooperative agreement between the DOE and the South Carolina Institute of Archaeology and Anthropology-University of South Carolina (SCIAA-USC). The cooperative agreement also allows for compliance work to be performed using an SRS-specific archaeological survey and testing model that reduces compliance costs. SCIAA/SRARP began a phased approach to archaeological compliance in 1973 involving reconnaissance surveys, general intensive watershed surveys, specific intensive surveys, data recovery and coordination with major land users on and around the Savannah River Site (SRS).

Since 1990, CRM compliance at the SRS for below ground resources has been based on a programmatic memorandum of agreement (PMOA) among the DOE-SR, the South Carolina State Historic Preservation Office (SCSHPO), and the Advisory Council on Historic Preservation. Through this PMOA, the DOE commits to conduct an integrated CRM program at the SRS that features research, public outreach, and compliance components. In return, the SCSHPO waives most DOE project-by-project compliance requirements that fall under Section 106 of the National Historic Preservation Act in favor of one annual compliance report. The PMOA also serves to meet general DOE regulatory responsibilities under Section 110 of the NHPA, Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and various other CRM laws and regulations.

The CWHPP originated in 1997. It assists DOE-SR in managing its compliance with Sections 106, 110, and 111 of the NHPA for Cold War and later era properties. Prior to 2003, compliance with Federal preservation laws for threatened historic Cold War resources was completed on a case-by-case basis under SRS's Environmental Quality Management Division. In 1997, DOE elected to fund a multi-year history project to develop a narrative on SRS's technical history in preparation for SRS's fiftieth anniversary. In addition to the narrative, SRS contracted for surveying significant Cold War resources that had reached or would reach 50 years of age by year 2000. This was expanded to an inventory of Cold War resources constructed between 1950 and 1989 to help fulfill DOE's Sections 110 and 106 responsibilities under the National Historic Preservation Act.

A comprehensive inventory was completed and a historic context developed for Savannah River's Cold War properties in 2004. Approximately 750 buildings and structures constructed between 1950-1989 were surveyed. At the close of that effort, 227 properties and a landscape were recognized as a National Register of Historic Places (NRHP) eligible Cold War Historic District. Eleven properties within that district were considered to be individually eligible to the NRHP. SRS has no National Register listed properties nor any National Historic Landmarks. The NRHP boundary coincides with the Site's perimeter. In addition to the Cold War Historic District, SRS maintains a significant collection of Cold War objects/artifacts that are curated in the Site's Curation Facility located in A/M Area.

Given the Site's ongoing missions, DOE-SR and the NNSA-SRSO recognized that site operations may impact Cold War NRHP-eligible properties over the next decade and that a plan was needed to avoid, minimize, or mitigate adverse effects to these properties. As a result, DOE-SR chose to develop a Programmatic Agreement, in consultation with the South Carolina State Historic Preservation Office (SCSHPO), the Advisory Council on Historic Preservation, the SRS Citizens Advisory Board (SRS CAB), the Citizens for Nuclear Technology Awareness (CNTA), and the cities of Aiken, Augusta, and New Ellenton, for the preservation, management, and treatment of the NRHP-eligible historic properties within the SRS Cold War Historic District and the establishment of the CWHPP

The PA specified that a Cultural Resources Management Plan be developed that would identify a treatment plan for Cold War historic properties, set policy to preserve a production area, develop a public outreach initiative that included heritage tourism goals and define a mitigation plan for

adversely affected historic properties that involves documentation, oral history and research. Specifically, the latter called for a series of thematic studies on the Site's major production processes and associated historically important themes. Overall, the Cold War Program is well integrated into the Site's Environmental Management mission.

The SRS CWHPP has evolved from a newly established program to a mature program with expanding goals and needs. The DOE-SR Program Manager and the M&O Program Manager direct the program. New South Associates under subcontract to SRNS serves as the Site's Cold War preservation consultant. The Cold War Program cultural resources staff now includes two historians that meet the Secretary of Interior's professional standards and are fully trained to handle DOE-SR's compliance needs, a curator, and a curatorial assistant. The curatorial staff is full time and is stationed in the Site Curation Facility. The historians are full to part-time depending on DOE-SR's compliance needs.

Identifying Historic Properties

The SRARP surveyed 589 acres between 2018-2020, and 191 acres in 2017. The SRARP uses SRS GIS layers, aerial photos taken by the SRS, and USFS timber survey for its day-to-day compliance related survey field methods.

Former staff member Jessica Cooper and volunteer (and former site resident) George Heath excavating a shovel test.

SRS completed a Cold War resource inventory in 2004, surveying and evaluating all facilities constructed between 1950 and 1989 that are associated with the Site's Cold War past for their National Register of Historic Places eligibility. The Site's Cold War era resource inventory is 100 percent complete for all resources 50 years of age and older associated with that context, therefore, no change since 2017. Identification methods follow guidance from the South Carolina State Historic Preservation Office and are also guided by national contexts in identifying historic significance. Our

current challenge is developing new contexts that reflect significant changes in SRS missions after the Cold War so that we can better identify and evaluate properties that are associated with other contexts or maybe eligible under Criteria Consideration G.

The CWHPP provides updated data into the Facilities Information Management System (FIMS), the Department of Energy's corporate real property database for real property as required by DOE Order 430.1B Real Property Asset Management order. This database is updated annually. The system provides the Department with an accurate inventory and management tool that assists with planning and managing all real property assets, including heritage assets or historic resources. The major categories used for the heritage assets or resources follow National Register vocabulary – NRE (National Register Eligible), Evaluated –not historic, and Not Evaluated. The CWHPP works with the Site GIS department. The Site GIS data is not shared with the SC SHPO for aboveground resources.

While the SRS has not formally implemented a new policy to promote awareness and the identification of historic properties during the last three years it has worked hard informally to show their importance through tours, historic photography, presentations, interpretive signage, films, and exhibits to the SRS workforce as well as the surrounding communities. This informal policy of preservation education has led to artifact donations, queries from fieldworkers and office workers asking "is this historic?" and a more vested interest in SRS' tangible past. This is particularly evident in artifact donations which were initially spurred by decommissioning activities but now come from Site personnel recognizing their potential for historic significance.

Few if any Section 106 undertakings occurred in the context of "unspecified planning needs" for either program.

Partnerships

The SRARP partners on a daily basis with the USFS, SREL/UGA, and DOE/SRNS to ensure compliance with cultural resources on the SRS. The CWHPP also partners with those agencies where and when appropriate and the two preservation programs work collegially.

The SRS CWHPP partnered with SRARP in 2019 to create the SRS Cemetery Database, allowing the public access to this important data collection archived by SRARP. Accessible at the project's website at www.srscemeterydatabase.org, the database contains over six thousand records of individuals that were relocated during the construction of the SRS. This database uses the original records of the USACE from the early 1950s and provides information on the individual's name, date of birth, and date of death when known. Also provided for each individual grave is information on the original cemetery and the name and grave location in the relocated cemetery.

Protecting Historic Properties

There have not been any changes within the reporting period on the Site's compliance procedures either for below or aboveground resources. What has benefited historic properties is the move toward preservation education for the workforce and public about historic preservation through tours, interpretation, presentations, etc.

The number of preservation professionals in the CWHPP has remained static with two historians meeting the Secretary of Interior's professional standards, a curator, and a curatorial assistant.

The CWHPP and SRARP consult with the SHPO, engage in tribal consultation, and work with local communities and heritage organizations. For example, a 2020 Cold War Property PA brought the SC SHPO, the Muscogee Tribe, the SRS Heritage Foundation and the Aiken County Historical Museum

into consultation. Also, the Program organizes and hosts a meeting with heritage tourism leaders throughout nearby communities in Georgia and South Carolina four times a year to share information, to look for potential partnerships, and to establish a heritage tourism network. SRARP is also part of this effort.

Both Programs work closely with a number of groups. For the CWHPP, we work closely with the SRS Heritage Foundation and the Aiken County Historical Museum in support of the SRS Museum.

Programmatic Agreements

Both Programs use a Programmatic Agreement to streamline the management and treatment of historic properties.

Cold War Historic Property PA

The CWHPP completed an updated PA in 2020 that will change its preservation and public outreach initiatives. The 2004 PA specified the development of a Cultural Resources Management Plan to define a treatment plan for all Cold War historic properties but in particular a "road map" for the preservation of a reactor area. The program's major challenge within the last three years has been a reassessment of this preservation goal and the development of a preservation platform and public outreach initiative that can meet the original intent and scale in the 2004 PA but will be feasible in 2020. For the last several years, stakeholders have made field visits, attended meetings and provided their input to the process. Tribal consultation was completed. The cultural resources staff and preservation professionals have shepherded this process and the completed PA was executed, which has a more robust preservation plank and a more fully developed public outreach component.

We believe that the compliance framework installed for the identification and treatment of Cold War resources has resulted in a strong compliance program. The 2004 Cold War era inventory and NRHP evaluation identified Cold War historic properties and created consensus on significance. The PA and the subsequent Cultural Resources Management Plan structured how the identified historic properties are to be treated. Prior to the PA, DOE-SR had multiple memorandum of agreements that needed to be tracked and consolidated. Now we have a vehicle for handling Section 106 actions efficiently that both DOE and the SHPO have participated in creating.

Using Historic Properties

The Site's historic properties are within a Federal reservation that is closed to the public. Many historic properties are not considered safe for reuse. Three parameters drive Site decisions in disposing or retaining historic properties: safety, security, and funding. Environmental concerns from the presence of asbestos to radioactive contamination, however, are typically cited as the deciding factor in a facility's retention or disposal.

SRS instead supports safe community reuse of excess assets where possible and appropriate. The SRS Community Reuse Organization (SRSCRO) serves as the DOE public/community interface for the review of proposals for the use of excess DOE-SR equipment to create local community jobs and/or enhance area economic development opportunities. The SRS CWHPP worked closely with SRSCRO in 2019 using their financial expertise to manage a DOE Legacy grant for a museum exhibit designed and curated by the Program in the City of Aiken. While no SRS historic properties were involved in local

economic development, a successful partnership was forged between the CRM program and the Community Reuse Organization that can be built upon.

Heritage Tourism

DOE-SR sponsors community wide Heritage Tourism Meetings that are another success both for the exchange of information of tourism ideas but also for their role in the greater community's recognition that SRS is also a historic place – a historic property with state, local, and national significance. The region's preservation and tourism community attend these meetings, organized on a quarterly basis by DOE-SR in compliance with the PA. The well-attended meetings are held at museums, historic sites, heritage centers, and libraries throughout the Central Savannah River Area. Tours are typically given at the host site and the sometimes 30-person strong group will patronize the local restaurants.

These rotating meetings provide an excellent opportunity for DOE-SR to report on the Site's preservation initiatives and to see how they maybe joined or complemented by outside tourism efforts. They also establish a cooperative basis for partnerships, allowing the Site to develop its public outreach. While the Site is not open to the public for safety and security reasons, its artifacts and their historical interpretation can travel.

SRS is involved with limited heritage tourism on site. History-based public tours are available for the Site, the Curation Facility (where all SRS artifacts are stored), and the historic townsites of Ellenton and Dunbarton. Each visitor receives a booklet during the 2-3-hour bus tour guided by Historian George Wingard with SRARP and Cold War Curator Melissa Hanson. The tour narrative begins with prehistory and ends with the establishment of the Site. Reservations are needed and end -of-tour comments indicate that each tour has been extremely well received.

During 2019, the SRS Museum received a DOE Legacy Grant that funded a heritage trail through the archaeological site of Ellenton, a small railroad town, erased by the Cold War. This trail was created to tell the story of Ellenton and its people so that new generations will understand the sacrifice that was made by all those who had to leave their homes to make way for the "bomb plant."

Touring the Ellenton Heritage Trail, 2019.

There are no remaining houses, businesses, streetlamps or doghouses. The footprint of the town, however, is preserved in the street surfaces, curbing, and driveways. The occasional daffodil or

crepe myrtle are clues to the rich Southern cultural life that once thrived there. The trail is a 1.5-mile loop. The USFS helped with street clearing. Street signs and interpretive panels, designed by New South Associates, were installed by SRARP within a six-block area of the historic townsite. Each is thematically based telling the story of the Ellenton community using oral history quotes and historic photographs. The bus and pedestrian tour along the Heritage Trail guided by SRARP Historian George Wingard will be offered annually.

Section 111 Responsibilities

To date, the Program has been focused upon its Section 110 and Section 106 responsibilities but is now sufficiently established to look more fully at adaptive reuse of its historic properties, creating awareness of Section 111. In the past, DOE-SR has adaptively reused historic properties to a limited extent however; this has been based on pragmatics, safety, and security rather than adherence to the preservation of historic properties. Purpose built production facilities have safety hazards, site geography may preclude mixed uses, and other factors may make this requirement a challenge. DOE-SR sees a potential opportunity in adaptive reuse specifically for historic properties used administratively and can explore that possibility.

The current CRMP does not contain a list of historic properties that are available for transfer, lease, or sale but that information can be included in the next update. DOE-SR has leased historic properties to onsite groups in the past but not under Section 111 and money accrued has not been directed toward the rehabilitation and maintenance of historic properties.

No outleases have occurred within the reporting period although talking points have been developed for 703-A, the Main Administration Building, a large multi-wing facility that is mostly vacant and that lies adjacent to the Site perimeter.

There are a number of obstacles to using Section 111 or other authorities to enable the continued use of historic properties in the inventory. Many SRS historic properties were purpose built and do not lend themselves to other uses. Also their geography within an area off limits to the public makes their reuse unlikely.

Successes, Opportunities and Challenges

The SRS CWHPP in partnership with the SRS Heritage Foundation, the SRARP, the Aiken County Historical Museum, and SCRSCO wrote and won a Legacy grant from DOE to create a permanent exhibit in the newly established SRS Museum in Aiken SC in 2018-2019. Such an exhibit would fulfill a stipulation under the PA which was still under consultation but all parties wished to move ahead. The grant came with one stipulation that the central thrust of the exhibit should deal with the theme of environmental justice in the establishment of the Site. This led to the creation of *The 6,000 Stories* exhibit, which explores the sacrifice made by 6,000 former residents of the SRS and the necessity of that sacrifice.

Blending oral histories, artifacts, and historic photography, the exhibit looks at five years of intense cultural change in this area of the rural south. The voices of those who gave up their farms and homes are easily accessed on computers, iconic artifacts associated with the four themes: the Announcement, Leavetaking, Where Will I Live?, and Engineering Change fill the center of the room, and the side walls are filled with historic photography and maps. Cold war artifacts are on display. A cemetery database sits in a window well for researchers interested in learning about those interred on the Site and those whose graves have been moved. An early twentieth-century radio that once sat

on the counter of the Rountree store in Dunbarton was loaned to the exhibit and a recreation of the November 1950 radio announcement of the coming of the Savannah River Site was replicated that can be played by pressing a button is chilling knowing that same announcement came across that radio in 1950.

The 6,000 Stories project was a great success and really underscored what federal leadership can accomplish in terms of stressing partnerships, working with the community, and spreading awareness of the significance of their historic properties. This was fully demonstrated by Miss Margaret Rountree, a native of Dunbarton, at the exhibit opening, who after reading that heat sources from SRS allowed the U.S. to fuel satellites to explore space, said: "How about that! - dirt from my Daddy's farm made that possible!"

SLAC National Accelerator Laboratory

Introduction

The SLAC National Accelerator Laboratory (SLAC) located in Menlo Park, CA is operated by Stanford University for the Department of Energy under a lease that extends through 2043. The site is located on 426 acres of land owned by Stanford University in an unincorporated portion of San Mateo County, California. SLAC conducts research in the areas of photon science, particle physics, particle astrophysics and cosmology, accelerator physics and accelerator research and development, which support research in a wide range of fields including structural biology and medicine, molecular environmental science, materials and nanoscience and ultrafast X-ray science.

Founded in 1962 with the construction of the two-mile linear accelerator (linac), the longest linear accelerator in the world, SLAC quickly became the world-leading laboratory for accelerator design and detector development, and importantly, for revolutionary discoveries in particle physics. The linac was soon followed by construction of electron-positron colliders and the Stanford Synchrotron Light source (SSRL), which, as an early synchrotron radiation source, pioneered pivotal X-ray studies in materials, chemistry and biology. To date, four Nobel prizes have been awarded for research done at SLAC.

In the mid-2000s, SLAC continued its pioneering work in accelerator development by proposing to use a portion of the two-mile linac to build the world's first short-wavelength X-ray Free Electron Laser (XFEL). The Linac Coherent Light Source (LCLS) was commissioned in 2009, producing ultrashort, ultrabright pulses of coherent X-rays that transformed X-ray science. SLAC's mission is to become the world-leading laboratory for X-ray and ultrafast science, based on its leadership in electron accelerator physics and application of X-ray science to materials, chemical and biological sciences. X-ray science plays a primary role in elementary particle physics in areas of theory, simulation, instrumentation, high-repetition-rate fast-readout-detector technology, and massive scale data analytics.

Identifying Historic Properties

The State Historic Preservation Office concurred in June 2016 with the Historic Resource Study report *SLAC National Accelerator Laboratory History Property Survey Report, February 2016,* which identifies historic properties during the agreed upon period of historic significance from the inception of SLAC until 1970. The report includes an inventory and evaluation of buildings and structures located at the SLAC site, a historic context of the facility's development, and State of California Department of Parks and Recreation (DPR) 523A (Primary Record) forms for all resources constructed within the established period of significance (1962-1970).

Those properties built after 1970 require the passing of additional time in order to objectively evaluate their context and potential significance. SLAC and the DOE acknowledge that later eras of significance may be identified in the future. As agreed to with the SHPO in the HRS, the DOE intends to update the HRS in 2026 to continue to analyze buildings that fall outside the presently established period of significance.

Protecting Historic Properties

There have been no changes to any programs or procedures that SLAC National Accelerator Laboratory (SLAC) has in place to protect historic properties over the past 3 years; however, SLAC has a relationship with a local consulting firm who has established expertise in historic properties at SLAC and is available to assist in protecting historic properties.

Successes, Opportunities and Challenges

After receiving concurrence on the HRS from the State of California in June 2016, DOE and Stanford University made a joint decision to pursue negotiations with the State Historic Preservation Office on a programmatic agreement. The SHPO originally agreed to this approach; however, in June 2017, the SHPO rejected the draft PA, indicating it was not "warranted at the time". SLAC National Accelerator Laboratory decided not to pursue a PA at that time as recommended by the SHPO and continue to submit Section 106 documents as needed. There have not been any Section 106 documents submitted during this three-year period. SLAC will continue to fulfill its obligations for consultation under the NHPA Section 106 review process.

Southwestern Power Administration

Introduction

Southwestern Power Administration (Southwestern) was established in 1943 by the Secretary of the Interior as a Federal Agency. Today Southwestern operates within the Department of Energy as authorized by Section 5 of the Flood Control Act of 1944. Southwestern's primary mission is to market power from U.S. Army Corps of Engineers 24 multipurpose dams operating in a four-state region to a six-state customer region (Figure 1). Southwestern operates and maintains 1,380 miles of high-voltage transmission lines, substations, and a communications system that includes microwave/fiber communications system that supports operation control of the tower system and mobile communications. Over two-hundred full-time employees work from offices located in Gore, Oklahoma; Jonesboro, Arkansas; Springfield, Missouri; and Tulsa, Oklahoma. Power scheduling and dispatching are conducted by staff in the Springfield, and Nixa Missouri Operations Center. Modifications to the power system are primarily for reliability and customer demand purposes, with no major construction or expansions of the transmission system footprint since the early 1970's. For the purposes of historic properties identification and protection, Southwestern evaluates the activities of maintenance, operations, rebuilds and upgrades within the existing footprint of the transmission system and rights-of-way (ROW), in compliance with Section 110 and Section 106 of the National Historic Preservation Act. Southwestern administers its cultural resources program through the stipulations contained within three separate state-based (Oklahoma, Arkansas, and Missouri) Programmatic Agreements that address operations and maintenance activities and their compliance pursuant to Section 106. New construction and upgrades are subject to the 106-review process.

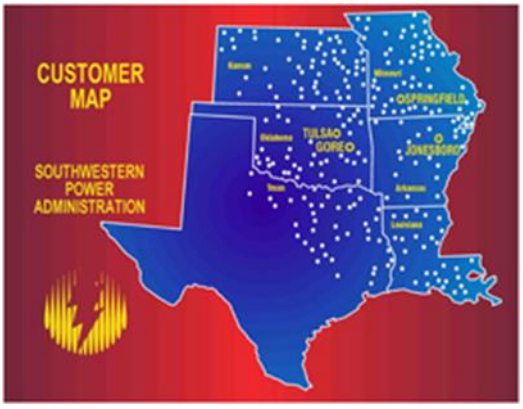


Figure 1 Southwestern Power Administration Customer Region Map

Identifying Historic Properties

During the 2018 through 2020 fiscal years, Southwestern initiated the Programmatic Agreement or Section 106 review process for twenty-seven projects. Of the 27 project 106 reviews, 5 were required to undergo a historical or archaeological survey. During the fiscal year of 2019 two archaeological surveys were conducted for upgrading a tower compound for the Hercules Tower Site, Arkansas and new tower site and control buildings in Nixa, Missouri. Within the fiscal year 2020, Southwestern has had one historical site review performed on the Van Buren Substation, (this determination is pending review with the Arkansas Historic Preservation Office (AHPP)). Archaeological surveys performed during the fiscal 2020 year were located on the rights of way of the transmission line 3007 (4) replacement structures, and transmission line 3005 Sallisaw to Liberty structure replacement. Among those archaeological surveys, no newly found sites that were located along the projects were recognized as eligible for listing on the National Register of Historic Places. In 2017, three formal 106 consultation were conducted for construction projects and one archaeological field survey was conducted.

Southwestern has implemented the following protocols for awareness of culturally sensitive areas. 1) Southwestern's ArcGIS 10.6.1 cultural resources database is utilized to identify sites, and to convey soil disturbances near or at culturally sensitive areas to managers, project engineers, Tribes and SHPOs, 2)Tribal Sensitivity Training given by local Tribal THPOs has been incorporated into the NEPA and 106 compliance training given each year to the Field Managers, Maintenance and

Operations Crews, 3) American Indian Tribes, THPOs and SHPOs are updated to the archaeological surveys or monitoring at various stages during the project's construction and preconstruction operations.

No historic buildings or structures have been newly identified within the last three years. One Substation in Van Buren, Arkansas has been surveyed and is currently under review by the AHPP for historical significance (Figure 2). Due to the age of the Section 110 Reviews (2006), a new review of the facilities, substations and communication sites will be completed within the fiscal year 2021, per request of the Arkansas, Missouri and Oklahoma State Historic Preservation Offices.

Figure 2 Van Buren Substation Control Building, Van Buren, Arkansas

Protecting Historic Properties

Southwestern Transmission line 3008 runs through the Lake Leatherwood Historical District Park, Carroll County, Arkansas, that includes the Lake Leatherwood dam, roadways, recreational facilities, and other elements of the park, were built in the 1930's by work crews of the Civilian Conservation Corps (CCC) utilizing federal funds from the US Soil Conservation Service, 2017- CR 2038 (Figure 3). The Transmission line 3008 in 2018 underwent modification and upgrades of lines and optical ground wire. A formal consultation was held with the Arkansas Historic Preservation Office for completion of the 106 compliance with stipulations of minimal ground disturbance during the upgrade.

Figure 3 Leatherwood Historic District Park CCC Fireplace

https://commons.wikimedia.org/wiki/File:Lake_Leatherwood_Park_Historic_District,_Fire_Place.JPG

A full time Archaeological firm, Pan American Archaeological Consultants, LLC are held on blanket contract for advising Southwestern, as well as providing data for the cultural database and performing historical and archaeological surveys. Other archaeological and historical consulting firms are contracted to perform surveys and monitoring efforts. Field Managers of each region are updated and informed on sensitive areas for their specific area. During the fiscal years of 2017 and 2020, two newly hired Environmental and Cultural Resource Specialist have been employed as full-time consultants to Southwestern with the Wyandotte Technologies, LLC.

The Environmental Specialists are housed at the Southwestern's Tulsa office and work closely with the Southwestern Environmental, Health, Safety and Security team, to assure the Section 106 and Section 110 compliance are implemented for each project.

Three single state Programmatic Agreements are in place for Arkansas, Missouri, and Oklahoma. A Multistate Programmatic Agreement is in the negotiation process. Southwestern is initiating a systemwide cultural resources survey for the entirety of the system rights of way. The survey will be implemented in three phases: Phase 1 Missouri transmission lines and portion of upper Arkansas transmission lines, Phase 2 will comprise the remainder of the Arkansas transmission line rights of way and Phase 3 will encompass the Oklahoma transmission lines rights of way. Phase 1 will begin in fiscal year 2021.

Using Historic Properties

Southwestern uses historical properties as rights of way easement only; within the Leatherwood Historical District as discussed in Section 2. Southwestern does not own any historical properties.

Successes, Opportunities and Challenges

Southwestern has had successful meetings within the fiscal years of 2018, 2019 and 2020 with the Osage and Cherokee Nation at their tribal headquarters, obtaining sensitive areas of cultural vegetation, stomp grounds, historical buildings, cemeteries and Trail of Tears regions. These areas are monitored, and construction plans are modified if required by the location of the sensitive regions. Southwestern is working with each of the American Indian Tribes, SHPOs and THPOs with connection to or having a vested interest in the Southwestern rights of way corridors or facilities lands or structures.

The Environmental Health, Safety and Security Division Director and Environmental and Cultural Staff attend the "To Bridge a Gap Meeting," hosted each year at a local Tribal facility by the U.S. Forest Service and a local Tribe. These meetings have given Southwestern a unique opportunity to share stories and interests with the Tribes, SHPOs and THPOs, and to obtain personal information concerning each tribe and their needs to protect the sensitive historical regions and historical buildings, caves, and connected lands.

Due to the locations, Southwestern's facilities, and rights of ways, a large percentage of the area is farming, ranching or forested regions. Several miles of the rights of way have not been surveyed for historical or cultural resources. Southwestern is beginning the endeavor to alleviate this issue by the systemwide Phase I Cultural Resources Survey beginning in the fiscal year 2021.

Western Area Power Administration (WAPA)

Introduction

As a part of the creation of the Department of Energy (DOE) in 1977, the enabling act (Pub. L. 95–91, §2, Aug. 4, 1977, 91 Stat. 567) called on the Secretary of Energy to assume ". . . the power marketing functions of the Bureau of Reclamation, including the construction, operation, and maintenance of transmission lines and attendant facilities . . ." and ". . . the transmission and disposition of electric power and energy generated . . . ." at two international dams on the Rio Grande River (42 U.S.C. §7152(a)(D) and (E)). The marketing and distribution of this hydropower was to be assigned to a new power marketing administration. Thus, the Western Area Power Administration (WAPA) was created as a part of the reorganization of the federal power generation and distribution system and the fledgling Department of Energy.

Today, WAPA, markets the power from 57 federal hydroelectric facilities through 322 substations and 17,304 circuit miles of transmission line to over 700 customers. WAPA's customer base is made up of such organizations as municipalities, military installations, Native American tribes, electrical coops, and various other public or governmental units. Some power is also sold to private energy companies. These customers, in turn, provide about 40,000,000 consumers with clean, reliable electricity in 15 states from Minnesota to California and North Dakota to Texas. WAPA supports this extensive electrical transmission system from 20 maintenance and/or operations centers and 487 communications sites.

WAPA is also constrained by its Open Access Transmission Tariff to provide interconnection to the federal grid for private power producers if transmission capacity is available. Consequently, WAPA presently hosts several renewable energy generators and has a substantial queue of applicants for interconnection.

This extensive transmission system is located, for the most part on lands under the jurisdiction of other agencies, most notably the Bureau of Land Management or the U.S. Forest Service, or on private holdings with only about 5173 acres of WAPA fee owned lands. The fee lands primarily contain the substations and similar facilities. Well over 95 percent of the transmission lines are on easements or rights-of-way on non-fee lands. Cultural resources on these lands are, then, not under WAPA jurisdiction though we have obligations for their protection within limits set by the land holder.

WAPA's web of transmission lines and supporting facilities scattered over so many jurisdictions presents significant Section 106 challenges. To help with the implicit variety of compliance practices, WAPA has divided responsibility for maintenance, repair, and new construction among four geographic regions with support from the Headquarters in Lakewood, CO. Reflecting its origins in the Bureau of Reclamation power distribution facilities the WAPA regions are:

- Upper Great Plains (UGP): All or parts of Montana, North and South Dakota, Minnesota, Missouri, Iowa, and Nebraska. Regional Office in Billings, MT.
- Rocky Mountain (RM): All or parts of Wyoming, Colorado, Nebraska, New Mexico, Arizona, Utah, Texas, and Kansas
- Desert Southwest (DSW): All or parts of Arizona, California, and Nevada.

- Sierra Nevada: Parts of California and Nevada.

Each of these regions has a Regional Preservation Official handling Section 106 compliance issues that do not require interaction with the Advisory Council on Historic Preservation. Matters requiring ACHP contact, such as adverse effects and their resolution or SHPO dispute resolution, are the province of the Federal Preservation Officer stationed at the Headquarters facility in, Lakewood, Colorado. Consequently, most site evaluations and effects findings take place at the regional level as that is level at which most projects are otherwise administered.

Three of regions meet their Section 106 obligations for routine maintenance and repair operations, including transmission line right-of-way vegetation management, meet their by means of programmatic agreements which support project planning and redundant paperwork elimination both for WAPA and the involved SHPOs.

Identifying Historic Properties

WAPA has relied on outside contractors for most of its resource identification and, given current budget and staffing limits, will continue to do so for the foreseeable future. We support utilization of current technologies if proven reliable and cost effective.

WAPA's Fee lands have been surveyed to current professional standards on the order of 33 percent. This is a significant increase from 2017 because of the removal of approximately 4,427 acres from WAPA jurisdiction at the Mead Substation in Nevada. There are 894 total sites in the DOE Reportable buildings inventory but we have no reliable record of how many have been actually surveyed and evaluated to professional standards. The DSW region has evaluated and consulted on 85 of its 98 substations. Only two have been found eligible and one has been determined a contributing feature of a National Historic District. In 2017, 13 of the substations had been evaluated. As of this the end of FY2020, another 73 have been evaluated and determined Not Eligible with SHPO concurrence.

WAPA has instituted no changes in its cultural resources program in the last three years. Progress has been made on elements of the 2017 plan, particularly regarding development of the enterprise geodatabase but it is still at least 24 months from deployment.

Since 2017 WAPA has recorded two new historic properties on its fee lands. Most of our inventory effort is focused on our transmission lines which are predominantly located on non-fee lands.

We at present have no partnerships with other agencies beyond the special use or rights-of-way agreements for transmission lines and facilities on other agency jurisdictions. However, we have begun investigation of the practicality of joining the Cooperative Ecosystems Studies Units (CESU) as a means of furthering a number of our environmental protection, including historic preservation, efforts with a reduced impact on our budget.

Protecting Historic Properties

We have not changed any of our procedures during the reporting period beyond preparing for the mandated changes in our records management system.

The WAPA cultural resources staff has nine FTE federal positions, eight of which are presently filled. We have one unfilled position still open in the UGP region but anticipate filling it soon. While there are no cultural staff on contract, we rely heavily on contract employees in GIS and Administrative Services to support out cultural resources team. We contract outside of WAPA for major field work projects as our present staffing levels are not adequate to support major inventory or mitigation efforts. For example, we anticipate contracting out the preparation of the cultural resources management plan and for continuing inventory and monitoring work on a transmission line rebuild project which is nearing its construction start date. This pattern has not changed in the last three years and seems likely to remain unchanged for at least the next three-year period.

All of the cultural resources staff has Section 106 responsibilities. One position, the Federal Preservation Officer, also has primary Section 110 responsibilities.

Because of its critical infrastructure and fundamental importance to national security and general wellbeing, WAPA has no facilities suitable for lease or other public use. Consequently, we have no Section 111 related activities.

WAPA treats every tribal consultation as an effort at partnership. This is particularly evident in the work done on renewable energy projects where we encourage full tribal participation in inventory and evaluation efforts. We have several other areas of contact with tribal organizations regarding the development of energy resources and transmission or distribution systems on tribal lands. But, we do not have a formal partnership program with any tribe, other federal or state agency, or public group. Security of our infrastructure and reliability of our power distribution currently limit activities of this sort.

WAPA currently has programmatic agreements in place for its routine maintenance and repair activities for the RM, SN, and DSW regions. We are currently preparing updated agreements with the California and Arizona SHPOs and are beginning planning for updating the agreement currently in use by the RM region. In addition, we have employed programmatic agreements to support longer term project efforts such as the San Luis to Tracy transmission line's construction in California. We are also developing a template for programmatic agreements on renewable energy interconnections that will better synchronize the Section 106 and NEPA processes. We are in preliminary internal discussions about the efficacy of the Prototype Agreement through the ACHP that could make the renewable energy project Section 106 component more consistent from state to state.

These agreements are important to the cultural resources program as they allow us to carry out repetitive no impact maintenance or repair work without repeating the full Section106 process and yet, with full SHPO participation, meet the goals of the NHPA in a timely manner. WAPA does not track the actual labor savings involved. Such savings are evident, however, in the reduced number of formal consultations that take place when minor repairs or routine maintenance such as vegetation management are needed.

Using Historic Properties

Given the restrictions we face in opening our facilities to the public our contribution to local communities and their economies comes not from our historic properties but from simply performing our mission of reliable delivery of clean energy.

WAPA's ability to open our facilities with historic property standing are constrained by Federal Energy Regulatory Commission statutes and regulations, North American Electric Reliability Corporation standards, and Occupational Safety and Health Act regulations that are too numerous to detail here. In summary, individuals without proper safety training and appropriate personal protective equipment cannot enter any facilities for the transmission of electricity on the national grid. Furthermore, all of WAPA's facilities also have stringent security requirements that limit access by visitors to those with specific business related to facility management or WAPA's electric transmission mission. These conditions essentially eliminate the possibility of public access. Over the last three years sensitivity to acts of hostile parties that may interfere with reliable electric transmission have increased and our adherence to appropriate security protocols have likewise been more widely applied.

WAPA has no Section 111 activities outside of the appropriate disposal of retired historic structures.

Successes, Opportunities and Challenges

WAPA has an effective Section 106 program which keeps the agency abreast or ahead of matters that may impact the agency's mission of delivering clean electric power to its customers. WAPA has nevertheless still not developed a balanced cultural resources management program. There have been a few steps taken in the past, for example in the three-year period for this report, the DSW region has surveyed and evaluated 73 of its substations. In the 40 years prior to 2017 only 13 substations had been evaluated for their historical significance. This success came from DSW's ability to fully staff its cultural resources team, allowing Headquarters to increase its Section 110 effort rather than helping to meet the region's Section 106 needs. The path to a fully successful cultural resources program for WAPA is clearly marked but there are still formidable, but not insurmountable obstacles to be removed.