



Department of Defense Legacy Resource Management Program

PROJECT 07-285

Recording the Cold War: Identifying and Collecting Cold War Resource Data on Military Installations

Carrie J. Gregory and Martyn D. Tagg

November 2008

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RECORDING THE COLD WAR

IDENTIFYING AND COLLECTING COLD WAR RESOURCE DATA

ON MILITARY INSTALLATIONS

CARRIE J. GREGORY AND MARTYN D. TAGG

LEGACY RESOURCE MANAGEMENT PROGRAM
PROJECT NO. 07-285



TECHNICAL REPORT 08-41
STATISTICAL RESEARCH, INC.
TUCSON, ARIZONA



Kirtland AFB
INSTALLATION NAME AND NO.

10 Mar 58
DATE

AA-7K
DRAWING NO.

1948
BY

57201-15
PROJECT NO.

486
BUILDING NO.

STATE
New Mexico

ASST
732

TYPE OF CONSTRUCTION
Permanent

CONDITION
Usable

OCCUPANCY
1

AIR FORCE INTEREST
Owned

UNIT OF MEASURE (OTHER THAN SF)
None

QUANTITY
1

REMARKS
-DENIED HALL, AIRMAN - 500-
CATEGORY ADMIN OFFICE - 610-125
-Voucher 6-70, Change Nomenclature
610125, ADMIN OFFICE, Voucher 173-72

VER NO.	DATE	DESCRIPTION	DATE COMPLETED	AREA (UNIT)	COST	TOTAL COST
166-58	11 Mar 58	Original Building	27 Feb 58	14,007 SF	14,007	367,399 00
182-58	31 Mar 58	Transfer kitchen equip to Supply	31 Mar 58	14,007	56,236 00	310,463 00
49-59	5 Sep 58	Install 1 air cooled refr unit	26 Aug 58	14,007	275 00	310,738 00
26-60	16 Sep 59	Install one exhaust fan and one evaporative cooler.	1959	14,007	28 95	310,796 45
41-60	21 Sep 59	Install exhaust fan, storage tank, & exchanger, steam & condensate piping.	1959	14,007	29 50	313,253 45
		BALANCES FORWARDED				313,253 45

AF FORM 15 JUN 56 1480 REPLACES DA FORM 9-47, 1 NOV 45 WHICH IS OBSOLETE IN THE USAF.

57201-15
6101-48
REAL PROPERTY ACCOUNTABLE RECORD - BUILDINGS

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13. ABSTRACT (Maximum 200 words) Statistical Research, Inc. (SRI), with Legacy Resource Management Program funding, conducted a pilot project to determine the cost and effort to create a systematic approach for identifying, compiling, and analyzing Cold War data on four Air Force bases. SRI documented the existence, availability, and locale of Cold War resources, including facility data, and established data-collection processes. The bases had from 2 to 22 inventory and evaluation reports, with 45 percent digitally formatted; 355–1,123 facilities, with 3–100 percent evaluated for listing in the National Register of Historic Places (27–100 percent had State Historic Preservation Office concurrence); and GIS layers with 63.7 percent of the facilities present. SRI also collected information on Cold War documentary resources, such as photographs and maps, but these data were too extensive for this project. Project results indicated data collection at other Department of Defense (DoD) installations would cost from \$8,000 to \$19,000 depending on size and number of resources, and DoD could spend as much as \$37 M to complete data collection on all installations. This pilot study provided an opportunity to define clear methods, identify potential pitfalls, and create cost and time metrics. With these data, DoD can plan for additional data collection, permanent data storage, and data access. Name of Federal Technical Responsible Individual: Dr. Paul Green Organization: Headquarters Air Combat Command, HQ ACC/A7VS Phone #: 757-764-9335 (paul.green@langley.af.mil)				
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Carrie J. Gregory and Martyn D. Tagg



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LIST OF ACRONYMS

ACC	Air Combat Command
ACES–RP	Automated Civil Engineer System-Real Property
AETC	Air Education and Training Command
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFMC	Air Force Materiel Command
AFSPC	Air Force Space Command
CAG	Clearinghouse Advisory Group
CRM	cultural resources management
DENIX	Defense Environmental Network and Information Exchange
DoD	Department of Defense
DoDI	Department of Defense Instruction
EO	Executive Order
GIS	geographic information system
GSU	geographically separate unit
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
ICRMP	Integrated Cultural Resources Management Plan
MAJCOM	Major Command (Air Force)
MOA	Memorandum of Agreement
MS	Microsoft
MTK	Missile Tracking Site
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PA	Programmatic Agreement
RPIR	Real Property Inventory Requirement
SHPO	State Historic Preservation Office
SLC	Space Launch Complex
SRI	Statistical Research, Inc.
USACERL	United States Army Corps of Engineers Research Laboratory
USAF	United States Air Force
UTTR	Utah Test and Training Range

EXECUTIVE SUMMARY

The U.S. Department of Defense (DoD) has large numbers of Cold War properties (all facilities constructed between September 1945 and December 1991) reaching the 50-year mark that require evaluation for National Register of Historic Places (NRHP) eligibility per Section 106 of the National Historic Preservation Act (NHPA). Pursuant to Section 110 of the NHPA, the DoD also has the responsibility to preserve historic properties they administer. In order to comply with these federal mandates, the DoD recognizes the need to inventory their large number of Cold War properties, but also realizes that they must establish guidance to ensure the task is completed in a consistent and effective manner. This project, funded by the Legacy Resource Management Program, identifies and compiles available data on Cold War resources, a critical first step in developing a programmatic approach to managing them effectively. Statistical Research, Inc. (SRI), conducted this project at four U.S. Air Force Bases (AFBs)—Davis-Monthan AFB, Arizona; Hill AFB, Utah; Kirtland AFB, New Mexico; and Vandenberg AFB, California—as part of an Air Force initiative that resulted from a Cold War workshop held in Tucson, Arizona in February 2006 to address this situation.

The goals of this study were threefold: to identify DoD Cold War facilities and associated documentation at a select number of installations; to create a systematic approach for identifying, compiling, and analyzing available data; and to prepare time and cost metrics on the process. The methods of this study can be described by five tasks: identification, collection, compilation, analysis, and documentation. The primary process used to collect available data and test methods consisted of a data call and on-site research and methods testing.

This study attempted to reflect diversity in installation command (i.e., function) and size. The four bases belong to three different major commands and vary in size from small to large. Data were acquired from the cultural resources management, real property, and geographic information system (GIS) staff at each installation and from the history office at Hill AFB.

This project provided insight into the existence, availability, and location of Cold War resources at each base. SRI acquired the integrated cultural resources management plan and all electronic inventory and evaluation reports. The number of inventory and evaluation reports from each base averaged 10 and ranged from 2 to 22, with 45 percent of them in electronic format. The number of Cold War facilities included in this study were 355 at Davis-Monthan AFB, 923 at Hill AFB, 916 at Kirtland AFB, and 1,123 at Vandenberg AFB. Of these total facilities, approximately 20 percent are 50 years old or older: 94 at Davis-Monthan AFB (91 are unevaluated), 92 at Hill AFB (9 are unevaluated), 451 at Kirtland AFB (32 are unevaluated), and 35 at Vandenberg AFB. The percentage of facilities evaluated for listing in the National Register of Historic Places (NRHP) averaged 71.9 percent, varying between 3 and 100. The percentage of evaluated facilities at each base with State Historic Preservation Office concurrence ranged between 27.3 and 100.0 and averaged 74.9 percent. All of the installations provided GIS layers, but only 63.7 percent of the facilities within the study were on these maps.

SRI also interviewed the cultural resources manager at each base about information on Cold War documentary or ephemeral resources, such as photographs and maps that support the inventory and evaluation reports and facility-specific data. Although not collected as part of this project, the existence, format, and location of these resources were recorded. Based on the cost to collect the data at the four test bases, predicted costs to conduct data collection at other DoD installations ranged from \$8,000–\$19,000 depending on installation size and number of resources. At this rate, DoD could spend as much as \$37 million to complete data collection on all installations.

The study identified a few problems with the available data and defined some data gaps. Problems included incorrect construction dates, inclusion of properties constructed outside of the Cold War era, data

discrepancies, lack of locational data, and lack of a field for original nomenclature in electronic forms. The data gaps include properties constructed prior to World War II and reused during the Cold War; Cold War sites not included in an architectural evaluation or in the Air Force Automated Civil Engineer System–Real Property because they are either archaeological sites or the locations of significant events or activities without buildings or structures; and properties constructed just outside of the statutory Cold War era.

This pilot study on collecting Cold War data on Air Force installations provided an opportunity to define clear methods, identify potential pitfalls, and create cost and time metrics. Having these data will provide a basis for DoD planning of additional data collection, permanent data storage, and data access. Knowing what information is available on Cold War properties and the time and cost to collect that data will help the DoD determine which properties are significant, which properties require additional documentation, and how many examples of a particular property type should be considered for NRHP eligibility. It was also determined, based on cost metrics, that DoD could spend up to \$37 million to complete similar data collection at all installations.

This current project has identified improved methods that will reduce the, time required for data-collection and synthesis and, ultimately, costs. First, creating the data sheet from scratch would be less time consuming than relying on the CRM spreadsheet and taking the time to confirm the data. Second, electronic data sheets should be created and taken to the bases during the visit so that direct data entry can be performed. Third, data in an electronic format are preferred, because they increase work efficiency and, if received during the data call, can eliminate travel time and expenses and allow for the identification of many data inconsistencies prior to base visits. Fourth, collected data should conform to the requirements and format needs of the CRM clearinghouse. Finally, a subsequent project is recommended to improve and refine the data collection process and integrate it into a DoD data-storage clearinghouse.

Introduction

The U.S. Department of Defense (DoD) has long recognized a need for effective and consistent management of its Cold War-era assets—facilities constructed between September 1945 and December 1991—and in 1996 designated the U.S. Air Force (Air Force) as executive agent for the Cold War Initiative (DoD 1996:Enclosure 2) (*Note: the new DoD Instruction [DoDI], published in 2008, no longer assigns executive agent responsibilities.*) Building inventories and evaluations have been and continue to be a primary cultural resources management (CRM) priority as large numbers of these Cold War properties begin reaching the 50-year mark and, therefore, require evaluation for National Register of Historic Places (NRHP) eligibility. As required by Section 106 of the National Historic Preservation Act (NHPA), the DoD has to consider the effect of its activities on properties listed in or eligible for listing in the NRHP (i.e., historic properties). Pursuant to Section 110 of the NHPA, the DoD must also assume responsibility for the preservation of historic properties owned or controlled by the agency.

In the early 1990s, the DoD designated the identification and protection of Cold War properties as one of its nine Legacy Resource Management Program (Legacy) focus areas. The Air Force produced the *Interim Guidance: Treatment of Cold War Historic Properties for U.S. Air Force Installations* in 1993 to guide these investigations (U.S. Air Force 1993). The guidance has been instrumental to the Cold War-inventory process, but it is in critical need of an update to address issues and problems recognized since its creation. For instance, while *Interim Guidance* provides valuable recommendations dealing with Cold War-property significance, installation managers must still consult with their State Historic Preservation Officers (SHPOs) on a case-by-case basis on issues of NRHP eligibility and assessments of project effects.

In the decade following issuance of *Interim Guidance*, preparation of general and commandwide historic contexts became the order of the day. A “historic context” is an organizational framework that presents information about related properties based on a given historical theme, geographic limit, and time period. Historic contexts identify the characteristics and qualities that a property must exhibit in order to be considered an important representation of the context’s theme, geographic limit, and time period. If a property exhibits these characteristics and qualities, it is most likely eligible for listing in the NRHP. *Interim Guidance* and the historic contexts guided the individual installations’ cultural resources managers across the country as they began to inventory and evaluate the most exceptional properties; this was an acceptable strategy at that time.

However, these projects operated in a vacuum, given that there were no mechanisms for sharing data across the DoD, or even within individual major commands (MAJCOMs). Installation managers individually made their own best interpretations and applications of the guidance and regulations and developed their own inventory and evaluation processes or used those established by their MAJCOM. They applied the same principles they routinely applied to all historic properties, leading to inconsistent treatment of resources across the commands and services. The problem facing managers was not the lack of historic contexts, but the fact that there was no clear direction. The many historic contexts, although of high quality, were never coordinated and sometimes provided conflicting direction. There were meetings to address Cold War issues, and progress was made, but many issues remained outstanding. One primary issue was inconsistent inventory and evaluation strategies from installation to installation due to the lack of a DoD-wide reference list or a centralized repository of all Cold War documents (such as historic contexts and studies of particular property types). (*Note: “Property types” can be defined in two ways. The first definition is Air Force real property nomenclature. Every facility is assigned a nomenclature [property-type]*

code based on function when it is constructed, and this nomenclature changes as the use of the facility changes. For instance, a building might be constructed as a “Hangar, Field Maintenance” and later become a “Maintenance Dock, Small Aircraft.” The second definition is the term as used in Interim Guidance, based on National Park Service terms and concepts in their National Register Bulletin 16, which groups individual properties under a type based on a set of shared physical [i.e., structural forms, architectural styles, or building materials] or associative [i.e., events or activities] characteristics. Interim Guidance, though, used function as an aid to group Cold War properties in a simpler format. For instance, the group Training Facilities includes the Launch Complexes and Combat Training Ranges.)

In the mid-1990s, many Cold War properties began to meet the 50-year threshold. The NRHP evaluations of these properties could no longer be put on hold if the properties were not exceptionally important. As they did in the early 1990s, installation cultural resources managers once again had to manage this growing number of potentially NRHP-eligible Cold War properties—properties that have begun to constrain military missions. This problem continues to grow. In 2006, there were approximately 345,000 facilities in the DoD inventory, of which 30 percent are currently over 50 years old. By the year 2025, an additional 40 percent will reach the 50-year mark, for a total of about 230,000 buildings (Sullivan 2006). The problem is essentially that in the next 33 years, or between 2008 and 2041 (i.e., 1991 plus 50 yrs), DoD will have a small but steady presence of under-50-year-age Cold War-era properties that may at any given time require eligibility evaluation. At a conservative estimate of \$2,000 per building for evaluation, and assuming only half are inventoried, it could cost the DoD over \$230 million and many years to conduct initial documentation and determine NRHP eligibility for 115,000 Cold War properties. The constraints on the military mission created by this growing number of potentially historic Cold War properties on DoD installations and the potential cost of continuing with current approaches of documentation and evaluation has made it necessary for the DoD to redirect the way it manages these resources.

The Air Force, under its executive agent responsibility in the former DoDI, was responsible for leading DoD implementation of the Cold War Initiative. This included promoting and participating in establishment of management efforts, recommending policy changes and positions for all of DoD, and keeping upper-level DoD management updated on the program (see DoD 1996:10–11). Thus, the Air Force was aware of the need to update *Interim Guidance* to address the current military mission and priorities that have evolved since the original guidance was prepared. The Air Force conducted a Cold War workshop (*Workshop on Updating Guidance for Management of Cold War-Era Properties on Military Installations*) in Tucson, Arizona in February 2006 [Legacy project 05-285]) to address this situation (Tagg et al. 2006). The participants, consisting of DoD and private-sector individuals with a range of expertise in the Cold War arena, agreed that it has become necessary for the DoD to redirect the way it is managing its Cold War properties, looking at Cold War inventories with a programmatic approach rather than on an installation-by-installation basis. For this approach to be effective, and to reduce duplication of effort, the DoD must (1) identify and compile existing data and (2) create a data warehouse to store these data and make them available to installation-level cultural resources managers, so they know what physical properties and documentation exist. The Cold War-workshop participants developed action plans and recommendations for implementing these goals.

In addition to the cultural resources challenges discussed in the 2006 Cold War Workshop, there are also many Real Property issues currently being faced that may affect such resources: (1) facilities are aging and in many instances being maintained far beyond their originally projected life cycle; (2) DoD missions are changing, introducing new challenges for continued use or adaptive re-use of Cold War-era facilities; (3) the DoD has excess capacity of many types of structures, including those of Cold War-era context; (4) there is an increased need for demolition of structures to make room for more modern facilities; and (5) DoD has initiated new approaches to Real Property management and comprehensive Asset Management, which increases the need for better cultural resources documentation. These sensitive topics are not discussed in detail in this report but are important factors resulting in pressures to improve cultural resources management of Cold War-era properties.

The DoD recognizes the need to inventory and manage the large number of Cold War properties administered by the military, but also realizes that it must establish guidance to ensure the task is

completed in a consistent and effective manner. To accomplish this task, the DoD must identify its Cold War properties to more efficiently and proactively integrate CRM with its military mission. Identifying and compiling available data on Cold War resources is a critical first step in developing a programmatic approach to the effective management of these resources. This current Legacy-funded study, *Managing Cold War Resources: Identifying and Compiling the Data* (Legacy project 07-285), will begin the task of streamlining the process by establishing methods for identifying and collecting Cold War data at Air Force installations. This process will, in the end, save the DoD money and ensure protection of those properties that are truly unique and significant. Knowing what information is available on Cold War properties will help the DoD determine which properties are significant, which properties require additional documentation, and how many examples of a particular property type should be considered for NRHP eligibility. It is also critical that all DoD cultural resources managers have access to the collected data to make their inventory and evaluation processes efficient in time and cost. For this reason, the final goal of permanent maintenance and sharing of the identified documents and information was a primary consideration during all phases of this study.

Project Description

This Legacy-funded study was completed by Statistical Research, Inc. (SRI), and presents the results of Cold War–resource data collection and synthesis at four U.S. Air Force Bases (AFBs): Davis-Monthan AFB in Tucson, Arizona; Hill AFB near Ogden, Utah; Kirtland AFB in Albuquerque, New Mexico; and Vandenberg AFB near Lompoc, California (Figure 1). By identifying the types of Cold War data available at a select number of installations, SRI developed the best methods for and costs associated with collecting the data.

This report is divided into six chapters. Following this introduction, Chapter 2 presents background information regarding the development of this study. Chapter 3 provides the project objectives and methods that guided the data collection, synthesis, and analysis. The results of the study are in Chapter 4, and the recommendations and conclusions are in Chapter 5. Appendixes A–D provide the raw data collected at each of the four bases.

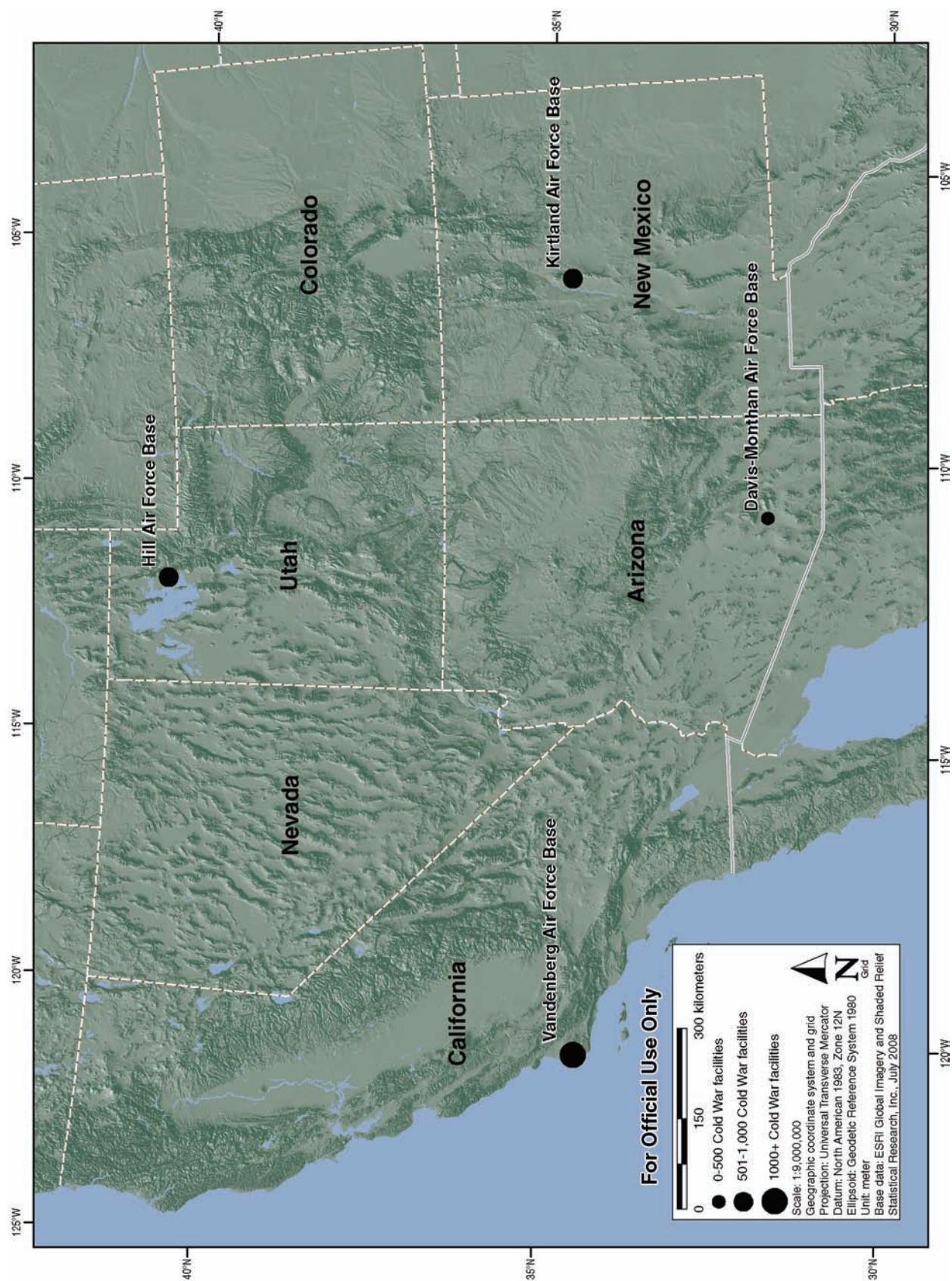


Figure 1. Location map of participating installations.

Background

U.S. Air Force Cold War Studies

The history of the Air Force and DoD Cold War studies has been discussed in detail in previous reports; the summary here is adapted from *A Workshop for Updating Guidance for Management of Cold War–Era Properties on Military Installations* (Tagg et al. 2006). For more information on this subject, readers are directed to Mr. Martyn Tagg’s (2003) Foreword in *Keeping the Edge: Air Force Materiel Command Cold War Context (1945–1991)* (Weitze 2003) and Dr. Paul Green’s (2006) *Summary of Inventory for Cold War Historic Properties on U.S. Air Force Installations*.

The Cold War era can be defined in two ways. Historical references—Churchill’s 1946 “iron curtain” speech and the fall of the Berlin Wall in 1989—are the seminal events used by Legacy and many researchers. The statutory reference is defined by Congress in Public Law 105-85, Section 1084 (a) *Commendation of Members of the Armed Forces and Government Civilian Personnel Who Served During the Cold War: Certificate of Recognition*, which recognizes the Cold War period as extending from September 2, 1945 (the end of World War II), to December 26, 1991 (the collapse of the Soviet Union) (Tagg et al. 2006:9). The latter is used in this report.

The emphasis on managing Cold War properties began with the advent of the Legacy program (Public Law 101-511, Section 8120) in 1991, when DoD recognized the wealth of unique and irreplaceable resources they owned that represent one of the most important events since World War II. The end of the Cold War, whether considered as the fall of the Berlin Wall in 1989 or as the dissolution of the Soviet Union in 1991, coincided with the greatest organizational transformation of the Air Force since its creation in 1947. Confronted with a reduced military threat when the Soviet Union disappeared as an adversary of concern, the Air Force inactivated some distinguished commands, such as the Strategic Air Command, and established new ones. This period of transition and the rapid course of the major reorganization challenged the Air Force’s ability to identify and treat significant Cold War resources within mission-driven timeframes and processes. DoD cultural resources managers were operating under existing laws, regulations, and practices during the process of NRHP evaluation for these historic resources. The recent nature of the Cold War challenged even the most experienced cultural resources managers to find the proper course of action to identify and evaluate the associated properties. And they were not alone. The NRHP and other components of the national historic preservation program focused on “older” history, and few of its practitioners were prepared to deal with the rapid influx of potentially eligible “younger” properties. Cold War resources were rapidly being lost as a consequence.

The Cold War Task Area is one of nine original Legacy emphases; its objective is to inventory, protect, and conserve the physical and literary property and relics of the DoD associated with the origins and development of the Cold War. For the first time, there was emphasis on the management of a large number of properties less than 50 year old. Ordinarily, properties of this age are not considered eligible for listing in the NRHP. These types of properties, however, can qualify for listing in the NRHP if the property is of exceptional importance. Unfortunately, there was no clear method to evaluate “exceptional importance” other than the general guidance provided in NRHP Bulletin 22, *Guidelines for Evaluating and Nominating Properties that Have Achieved Significance within the Last Fifty Years* (Sherfy and Luce 1990).

Mr. Gary Vest, then deputy assistant secretary of the Air Force (Environment, Safety and Occupational Health), brought the lack of guidance to light in a 1992 memo to the Air Force Civil Engineer regarding management of Cold War properties threatened by an undertaking at Vandenberg AFB, California:

Personnel . . . are uncertain of their requirements under the National Historic Preservation Act. . . . There is no DoD or USAF-wide agreement concerning the eligibility of Cold War or Scientific and Technical assets for listing on the National Register of Historic Places. This is clearly an opportunity for the USAF [Air Force] to take the lead. Request you . . . develop a policy or programmatic agreement regarding Cold War materials. (Vest 1992)

The Air Force did take the lead. In early 1993, in direct response to Mr. Vest's challenge, Cold War project manager Dr. Rebecca Cameron (historian, Air Force History Support Office) and a group of DoD cultural resources managers formulated a plan for addressing the preservation of the military's Cold War resources. Two management strategies were discussed at a number of workshops in the early 1990s. The first involved a long-term process of developing historic contexts and then inventorying and documenting individual facilities. The second included a "triage" approach to stem the almost daily loss of potentially significant Cold War resources. In the end, the Cold War planning group developed a two-phase approach using a combination of both strategies simultaneously. The two phases included site-specific documentation of the most significant Cold War-era properties and broad national-theme and historic context studies of the prominent military weapons systems and missions that played a primary role in the Cold War and had a major impact on the American landscape.

Two reports outlined the process, methods, and goals of future Cold War studies. Dr. Paul Green (cultural resources manager, Headquarters Air Combat Command [ACC]) authored *Interim Guidance: Treatment of Cold War Historic Properties for U.S. Air Force Installations* (U.S. Air Force 1993), and Dr. Cameron (1994) completed *Coming in from the Cold: Military Heritage in the Cold War*. In the mid-1990s, the U.S. Army published its own Cold War policy guidance, *Interim Policy for Cold War Era Historic Properties* (Advisory Council on Historic Preservation 1996; Guldenzopf 1995), with many similarities to *Interim Guidance*.

The Air Force's *Interim Guidance* remains the single most important document for the management of Air Force, and perhaps even DoD, Cold War resources, even though it was created as an interim policy. The document was the Air Force's interim measure to accomplish Legacy's goal of ensuring that historically significant Cold War properties were identified, recorded, and if feasible, retained for study and public education. It was also a tool to help installation managers comply with Section 106 in terms of identifying NRHP-eligible Cold War properties. *Interim Guidance* established operational relevance and national significance as driving principles for determining NRHP eligibility of Air Force properties. State or local significance was considered for individual properties, but only as an exception to the rule. Dr. Paul Green, author of *Interim Guidance*, states

We wanted Cold War historic properties to be ones that the average citizen could recognize as emblematic of that time and struggle. Less relevant were those routine support facilities that would have been present in the military with or without the Cold War: warehouses, barracks or dormitories, base commissaries and exchanges, hospitals, etc. Examples with particular and important characteristics directly related to the Cold War would be welcomed, of course. (Green 2006:3)

Interim Guidance and *Coming in From the Cold* opened the gate for a virtual flood of Legacy-funded national historic contexts in the mid- to late-1990s on subjects such as ballistic missiles, training and education programs, defense production facilities, communications and command centers, defensive radar networks, and fighter- and bomber-aircraft missions. Some prominent examples include *To Defend and Deter: The Legacy of the United States Cold War Missile Program* (Lonnquest and Winkler 1996), *Searching the Skies: The Legacy of the United States Cold War Defense Radar Program* (Winkler

1997a), and *Training to Fight: Training and Education During the Cold War* (Winkler 1997b) (for more on these, see Green 2006 and Thompson and Tagg 2007:8–9). These guidance documents and national context reports led to what can be considered the third phase of the Cold War Task Area—command-specific historic contexts and building inventories.

The original DoD and Air Force reports established guidance on how to treat Cold War properties, and national historic contexts provided the big-picture view of various programs. The largest Air Force MAJCOMs completed historic contexts and commandwide inventories that identified their command's most significant contributions to the Cold War and the property types that supported these missions: ACC (introductory and summary reports with 27 base-specific volumes; Lewis et al. 1995, for example), Air Mobility Command (eight base-specific volumes; see Weitze 1996, for example), Air Education and Training Command (AETC) (Prior and Salo 2003), and Air Force Materiel Command (AFMC) (Weitze 2003). These historic contexts tied specific installations into the broader Cold War, thus fulfilling the needs of installation cultural resources managers as they completed compliance-driven and proactive Cold War property inventories and evaluations across DoD under Sections 106 and 110 of the NHPA. The U.S. Army also completed one historic context on Army Materiel Command (Gaither 1997) and some large thematic studies, such as one on military-industrial properties (e.g., Lavin 1998). In addition, Army installations have their own individual projects, but reference data are not readily available (Jennifer Groman, personal communication 2006).

The focus of Cold War studies has moved away from preparation of large historic contexts and studies in favor of installation-specific inventories and evaluations. A few historic contexts and large projects have been completed recently, such as the AETC and AFMC Cold War contexts, ACC's *Pilot Study on Cold War Documentation Preservation* (Peyton et al. 2003), and AFMC's *Identification and Categorization of Cold War-Era Research, Development, Testing, and Evaluation Property Types* (Thompson and Tagg 2007). ACC is nearing completion of a study of Cold War properties on former Air Force installations and is in the second phase of a commandwide assessment of Cold War properties not evaluated during earlier studies. The Department of the Navy is currently completing a servicewide historic context study; the initial themes under development are deterrence, sea control, intelligence, and research/development (Brian Lusher, personal communication 2006). Installation-specific inventories and evaluations continue as cultural resources managers comply with their Section 106 and Section 110 responsibilities for Cold War properties coming into their fiftieth year.

The Cold War has also been the topic of conversation at a number of workshops. In 1996, The Air Force Center for Environmental Excellence (AFCEE) and Eglin AFB hosted a Cold War workshop that examined building-inventory and historic context efforts, discussed deficiencies, and made recommendations for further work. AFCEE, ACC, and the U.S. Army Construction Engineering Research Laboratory (USACERL) produced a newsletter from 1996 to 1998 stemming from the workshop that covered all aspects of Cold War projects and studies within DoD and the Department of Energy. The early issues also included a bibliography of work completed to that date. AFCEE also began a Cold War-study database.

As mentioned above, the Air Force, working with the SRI Foundation and SRI, organized a workshop in 2006 to develop strategies for more efficient and consistent management of Air Force Cold War-era resources (Tagg et al. 2006). The workshop, conducted under Legacy Project 05-285, consisted of DoD and private-sector participants with a range of expertise in the Cold War arena. This included individuals who were inventorying and managing Cold War properties on military installations and carrying out environmental and historic preservation regulatory responsibilities. Workshop participants were brought up to date on the status of the DoD Cold War Initiative and the perceived issues within the program. They identified and examined key issues, such as the lack of current program guidance and centralized databases, discussed successful approaches to addressing these issues, and developed action plans for the DoD to consider. The goals of the workshop were to recommend revisions to existing guidance and develop procedures for collecting the baseline data necessary to determine how to proceed with management of Cold War resources.

Workshop participants identified four major topics related to achieving these goals: (1) data collection/synthesis, (2) data repository/clearinghouse, (3) updating of *Interim Guidance*, and (4) executive-level

el briefing. The 2006 Cold War workshop report provided an action plan for Air Force and DoD cultural resources managers to address these topics (see Tagg et al. 2006:27–28). The Air Force has taken the lead on updating *Interim Guidance* and keeping executive-level management, such as the federal preservation officer, informed on Cold War Initiative progress. The two topics that will not be handled from within the Air Force—data collection/synthesis and data repository/clearinghouse—are being addressed in two 2007 Legacy projects. The data repository/clearinghouse issue was subsumed under *Guidance for CRM [Cultural Resources Management] Information Clearinghouse* (Legacy Project 07-351, Renner and Van Citters 2007). This project has already made great progress, creating clearinghouse guidelines (Van Citters and Peak 2008) and beginning to populate a newly restructured Defense Environmental Network and Information Exchange (DENIX) with cultural resources data. Data-collection is being addressed in a follow-up study to the Cold War workshop, which is the subject of this report.

Summary

After over 10 years of effort, DoD cultural resources managers need to reevaluate their progress. Two things are apparent: many good studies have been completed and DoD would greatly benefit from compiling and synthesizing their findings. The current Cold War projects are often operating in a vacuum with no access to data from other commands or services. This leads to duplication of effort and NRHP evaluations and nominations that do not consider the “big picture.” A primary issue is the lack of a DoD-wide reference list of all Cold War documents such as historic contexts and specific property type studies, which leads installation managers to consult with their SHPOs on a case-by-case basis on issues of NRHP eligibility and assessments of project effects. While there is nothing inherently wrong with this approach, Section 106 consultation can be conducted in a more efficient and programmatic manner.

Although there are no executive agency responsibilities in the new DoDI, the Air Force remains committed to developing a systematic approach to addressing these issues. They must identify their Cold War-era resources to more efficiently and proactively integrate CRM with their military mission. Identifying and compiling available data on Cold War properties is a critical first step in developing a programmatic approach to the effective management of these resources. The current study developed tools and approaches for identifying and managing Cold War resources DoD-wide in a cost- and time-efficient manner.

Project Objectives and Methods

This study had three goals: (1) to identify DoD Cold War facilities and associated documentation; (2) to create a systematic approach for identifying, compiling, and analyzing available data; and (3) to prepare time and cost metrics on the process. To accomplish these goals, the types of Cold War resources available at four bases were identified and the best methods for and costs associated with collecting those data were determined. The methods of this study fall under five tasks: identification, collection, compilation, analysis, and documentation.

This study was guided by nine general research questions. SRI anticipated that the data collected at each base would provide answers to the questions regarding quantity and types of Cold War resources, while the methods developed to conduct this study would provide answers to the questions about data collection. The following research questions were posed for this study:

1. How many DoD properties constructed during the Cold War (September 1945 to December 1991 [statutory reference]) are still extant at each installation?
2. How much building inventory has been conducted to date?
3. What types of Cold War-era properties have been documented and evaluated?
4. What data must be collected?
5. How will the data be collected?
6. How will gaps in the data-collection process be addressed?
7. Are all the data available, and in what format?
8. Once the data have been collected, how will they be uploaded onto the CRM Clearinghouse/DENIX?
9. How much time and money will it take to collect the data?

Methods

Identification

The first step was identifying Air Force bases to participate, the data needed to answer research questions, potentially available data, and data-collection methods. This study was conducted at Air Force bases, as the project was part of the Air Force Cold War Initiative that came out of the Cold War workshop held in Tucson, Arizona in February 2006. A select group of diverse installations was selected to ensure a wide range of data scenarios, such as MAJCOM (i.e., mission), expected number of Cold War facilities, size of base, and expected number of inventory and evaluation reports. The four participating installations included Davis-Monthan AFB, Hill AFB, Kirtland AFB, and Vandenberg AFB.

Next, SRI identified the data needed to meet the goals and answer the research questions. The necessary data included facility-specific information and associated bibliographic information originating from real property records and CRM reports. In addition to the required data, SRI considered collecting secondary data to better understand the Cold War resources available at each base. In collaboration with several participants of the 2006 Cold War workshop, a comprehensive list—a universe, or the entire realm—of potentially available data was prepared. It included primary, secondary, and bibliographic data.

- Primary data included facility-specific categories: installation name, property, facility number, facility street address, current nomenclature, property type, construction date, original nomenclature, design/plan date, design/plan number, architect, engineer, builder, alteration date(s), NRHP status, and referenced document(s).
- Secondary data referred to documentation that was associated with or supported decisions about Cold War facilities and included inventory and evaluation reports, Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER)/Historic American Landscape Survey (HALS) documents, NRHP nominations, planning documents, agreement documents, historic context studies, installation histories, maintenance plans, architectural drawings, audiovisual materials, maps, oral histories, photographs, and real property records.
- Bibliographic data collection was directed at creating a bibliography of the secondary data, with a focus on inventory and evaluation report specifics. It included installation name, document type, title, publication date, author or preparer, author or preparer company, responsible agency, contracting agency, contract number, document location, abstract, keywords, page count, point of contact, electronic format, file size, and security clearance status.

The list was reviewed and revised based on likely data availability, data format (electronic preferred), and amount of time to collect. Once the lists were complete, SRI created preformatted data sheets for facility, documentary, and bibliographic information. The project would focus on (1) collecting facility data, with an intent to create a DoD-wide Cold War property-type list like that for World War II (see Kundra et al. 1997), and (2) those reports and documents relating to the Cold War that would be of the most value to the most people. The following data were prioritized for collection:

- Facility data: installation name, remote property name (if applicable), facility number, current nomenclature, construction date, original nomenclature, NRHP status, and inventory and evaluation report citation(s)
- Documentary data:
 - Integrated Cultural Resources Management Plans (ICRMPs)
 - Inventory and evaluation reports
 - Electronic-format documents collected
 - Hard-copy documents data-mined
 - HABS/HAER/HALS documents
 - Electronic-format documents collected
 - NRHP nominations (electronic format preferred)
 - Electronic-format documents collected
- Bibliographic data from inventory and evaluation reports: title, publication date, author or preparer, author or preparer company, responsible agency, contracting agency, contract number, document location, electronic availability, electronic format, electronic file size, and security clearance status
- Other documentary data were not prioritized for collection, but their existence, location, and format was recorded :
 - Hard-copy HABS/HAER/HALS documents and NRHP nominations and all planning documents, agreement documents, historic context studies, installation histories, maintenance plans, architectural drawings, audiovisual materials, maps, oral histories, photographs, and real property records

The method for data collection included an initial data call with follow-up base visits. The December 2007 data call (e-mail letter to each participating installation) requested the ICRMP (electronic or hard copy), the working CRM data on built resources, a Cold War properties list from the real property office, and any inventories and evaluations in electronic format. Bases responded to the data call with documents submitted in a variety of formats via mail, e-mail, and file transfer protocol.

The follow-up base visits were conducted by the project team from April to June 2008. During these visits, SRI acquired data from the CRM, real property, and geographic information system (GIS) staff at each installation and from the history office at Hill AFB. Collected items included outstanding items from the data call; GIS layers with the capability to map Cold War facilities, and bibliographic and content information from hard-copy inventory and evaluation reports. An informational survey was also conducted with CRM staff regarding the existence, location, and format of supporting documentation. The data from this survey were entered into a table and are provided in the appendixes. Although the omitted data from the original lists should be collected at some point, they were not addressed in this project.

Facility Data Specifics

NRHP Status

Early in the study, the importance of the NRHP status was identified as a primary data component, and its presentation or categorization should conform to current standards. As a means to accomplish this, SRI used an adapted version of the Real Property Inventory Requirement (RPIR) historic status code, which was issued in 2005 by the DoD. Born of two Federal executive orders (EOs) pertaining to historic properties—Federal Real Property Asset Management (EO 13327) and Preserve America (EO 13287)—RPIR meets the mandate to “report the historic status of each asset—noting if the property has been evaluated for historic status and recording all National Historic Landmarks; historic properties eligible for, or listed on, the National Register of Historic Places; or properties with contributing elements to historic districts” (Lione 2007:4). SRI used the following revised RPIR categories to record the historic status of each Cold War facility in the study:

- NHLI – Individual National Historic Landmark (NHL)
- NHLC – Contributing element of NHL district
- NRLI – Individual NRHP listed
- NRLC – Contributing element of NRHP listed district
- NREI – Individual NRHP eligible
- NREINSC – Individual NRHP eligible, no SHPO concurrence (or recommended individual NRHP eligible)
- NREC – Contributing element of NRHP eligible district
- NRECNSC – Contributing element of NRHP eligible district, no SHPO concurrence (or recommended contributing element of NRHP eligible district)
- NCE – Noncontributing element of NHL/NRHP listed/NRHP eligible district
- NCENSC – Noncontributing element of NHL/NRHP listed/NRHP eligible district, no SHPO concurrence (or recommended noncontributing element of NHL/NRHP listed/NRHP eligible district)
- DNE – Determined not NRHP eligible
- DNENSC – Determined not NRHP eligible, no SHPO concurrence (or recommended not NRHP eligible)
- NEV – Not yet evaluated

The historic status code in RPIR is a required field in real property databases of all of the services, mandating cultural resources managers to collect this datum. This project fulfilled those needs for the four participating bases.

Another consideration for NRHP status was *Interim Guidance*, in which only properties achieving exceptional importance during the Cold War qualify for listing in the NRHP (U.S. Air Force 1993). In the

process of recording the NRHP status of Cold War properties, no differentiation was made between inventories that used the traditional NRHP criteria or the supplemental *Interim Guidance* specifically tailored for evaluation of Cold War properties. In addition, all unevaluated properties are recommended for inventory and evaluation whether the project team deemed them exceptional or not.

Infrastructure

Many of the properties tracked by the real property office, such as underground tanks and pipes, roads, and curbs, are considered infrastructure and are not typically recorded through architectural inventories and evaluations. Facilities considered infrastructure were not included in this study unless they had been previously inventoried or evaluated.

Family Housing

Family housing properties are not considered in this study because they have been privatized and now belong to private contractors under 50-year leases. These properties are no longer managed by the military in terms of assets, but if the housing privatization action involved historic properties, it included a Memorandum of Agreement (MOA) or Programmatic Agreement (PA) whose provisions require continuing DoD involvement of varying degrees. Some real property offices have removed family housing properties from the installation books, and in some cases, such as Davis-Monthan AFB, the real property office does not even retain records of the buildings. Some regulators feel that the military retains ultimate responsibility for Section 106 review and associated litigation of undertakings associated with the privatized family housing, especially since they may return to DoD ownership after 50 years, but this has not yet been tested (Drs. Paul Green and Jim Wilde, personal communication 2008). For the purposes of this study, the number of family housing properties was recorded, but very little additional data were collected on them (even if it was available), and they are not discussed in any further detail in this report.

Collection

Collection included synthesizing the information received from the data call, resolving discrepancies, and creating a list of property types. SRI began by reviewing data received from the data call, which included ICRMPs, CRM data, real property data, and electronic-format reports. All base cultural resources managers submitted electronic copies of the ICRMPs, which provided overviews of the bases and their CRM programs. CRM data consisted of the office's working database of the built environment, and those received were in the form of Microsoft (MS) Excel spreadsheets (CRM spreadsheets). Real property information is available electronically in the Air Force Automated Civil Engineer System–Real Property (ACES-RP). The real property data submitted by the bases to SRI consisted of “7115” reports, or Air Force Real Property Inventory Detail Lists, exported from ACES-RP into MS Excel spreadsheets. Electronic versions of inventory and evaluation reports were also received.

SRI created facility data sheets. Data from the real property office and cultural resources managers were adapted to meet the needs of this study. The ACES-RP spreadsheets included much more information than this study required, so extraneous data were deleted, including pre-1945 and post-1991 properties, entries for undeveloped land, utility plants within buildings, building functions, building tenants, square footage, and condition codes. The CRM spreadsheets were also revised to reflect only those facilities dating from 1945 to 1991. Once the ACES-RP and CRM spreadsheets were remodeled, they were merged into one. Bibliographic data from electronic-format reports were entered directly into preformatted bibliographic data sheets. Data from hard-copy inventory and evaluation reports would be collected during the base visits.

Upon completion of the facility-data merging, more discrepancies than anticipated were discovered between the CRM and ACES-RP spreadsheets. Initially, inventory and evaluation reports and the ICRMP were consulted to resolve them, but this process resulted in the identification of additional discrepancies between the inventory and evaluation reports and the CRM spreadsheets. Examples of discrepancies included the following:

- Facilities were listed in the CRM spreadsheet and not in the ACES-RP spreadsheet. Reasons included unrecorded demolitions, recorded facility components that did not have distinct facility numbers, and incorrectly recorded construction dates.
- Facilities were listed in the ACES-RP spreadsheet and not in the CRM spreadsheet. With the exception of often revealing resources that had not been previously evaluated, most true discrepancies were caused by incorrectly recorded construction dates.
- Facilities were evaluated but not listed in the CRM spreadsheet. Reasons included transcription errors and partial, incomplete, and multiple spreadsheets.

To resolve all discrepancies, new facility data sheets were created. This process began with the loading of the revised ACES-RP data into new facility data sheets. Considered the most complete set of data, the following ACES-RP fields were used: installation name, remote property name, facility number, current nomenclature (short form), and construction date. Then SRI reviewed the inventory and evaluation reports and entered the NRHP status and the report citation into the new facility data sheets. If other information was readily available in the reports, such as construction date or current nomenclature, those data were compared to the ACES-RP data. Remaining discrepancies would be resolved during the base visits. At this time, the short forms of the current nomenclature, as provided in the ACES-RP spreadsheets, were converted to the long forms; for example, “TWR, SP” became “Special Tower,” using the DoD Real Property Classification System (U.S. Army, Headquarters 2004) and providing more concise information on each facility.

In the development of this study, it was presumed that most, if not all, of the data from the hard-copy Real Property Accountable Records (e.g., AF Forms 1430, 1432, and 1433 and DA Form 2877) were digitized into ACES-RP when the asset-management system went electronic. These paper records included numerous facility-specific categories (Figure 2). In order to create a complete list of property types, the original nomenclature field must be filled. During this study, SRI discovered that the original nomenclature and category codes, and the history of alterations and category code changes—fields on Real Property Accountable Records—were not transferred to ACES-RP. This was the case at all four bases, as ACES-RP does not have a field for these data. Therefore, these important data were only available on the Real Property Accountable Records and had to be collected during follow-up base visits. As this problem was not identified prior to the original base visits, only Davis-Monthan and Kirtland AFBs were revisited. To gather this information, the facility data sheets were revised with the following categories: original property card (yes/no), construction date (if card differed), and original nomenclature. SRI teams collected these data by reviewing each card and manually filling in the printed data sheet.

Compilation

The compilation task was facilitated through base visits and analysis, during the course of which SRI resolved discrepancies, performed quality-control checks, and searched for additional information on Cold War resources. This included collecting any outstanding items from the data call and gathering and comparing information from hard-copy inventory and evaluation reports, such as NRHP status, report citation, and other bibliographic data. Quality-control checks included investigating installation CRM libraries for overlooked inventory and evaluation reports, confirming that evaluation reports had SHPO concurrence, and resolving any discrepancies that remained after data collection. During the base visit, installation map layers that included facility number, building footprints, roads, runways, and installation boundaries, were acquired from GIS staff.

Next, the existence of secondary data was identified through an information survey of cultural resources managers. This information provided data about the extent of remaining Cold War resources available. The survey collected data on the availability, location, and format of the following Cold War resources:

- HABS/HAER/HALS documents
- NRHP/NHL nominations

Kirtland AFB INSTALLATION NAME AND NO.		10 Mar 58 DATE		AA-FK DRAWING NO.		1948 RP ACCOUNT NO.		-57201-15 CONTROL NO.		426 BUILDING NO.	
DIMENSIONS (Width x Length)											
MAIN BUILDING		OFFSETS		WINGS							
42' x 158'		16' x 56'		74'8" x 35'		MECH REPAIR ROOM 28' x 24'					
		74'8" x 22'		53'4" x 29'							
Enclosed a 29' x 8' covered walkway (1/2 value)											
MATERIALS											
FOUNDATION		FLOOR		WALL		ROOF					
Concrete		Concrete		Concrete Block		Conc & B/U					
HEATING											
SOURCE		TYPE		FUEL							
Boiler		Steam		Gas							
FIRE PROTECTION											
NO.		TYPE									
UTILITY CONNECTIONS											
WATER		BLDG EQPT		NO.		TOTAL CAPACITY					
2 1/2"		AIR <td colspan="2"></td> <td colspan="6"></td>									
SEWER <td colspan="2">CONDITIONING <td colspan="2"></td> <td colspan="6"></td> </td>		CONDITIONING <td colspan="2"></td> <td colspan="6"></td>									
6"		EVAPORATIVE COOLING <td colspan="2"></td> <td colspan="6"></td>									
ELECTRIC <td colspan="2">MECHANICAL COOLING <td colspan="2"></td> <td colspan="6"></td> </td>		MECHANICAL COOLING <td colspan="2"></td> <td colspan="6"></td>									
30 4W 120/208V		HOT WATER FACILITIES <td colspan="2"></td> <td colspan="6"></td>									
CONDENSATE											
V		DATE		DESCRIPTION		DATE COMPLETED		AREA UNIT		TOTAL COST	
								AMOUNT		TOTAL	
166-58	11 Mar 58	Original Building				27 Feb 58		14,007 SF		367,399 00	
182-58	31 Mar 58	Transfer kitchen equip to Supply				31 Mar 58		14,007		56,936 00	
49-59	5 Sep 58	Install 1 air cooled refr unit				26 Aug 58		14,007		310,463 00	
26-60	16 Sep 59	Install one exhaust fan and one evaporative cooler.				1959		14,007		310,796 45	
41-60	21 Sep 59	Install exhaust fan, storage tank, & exchanger, steam & condensate piping.				1959		14,007		313,253 45	
								BALANCES FORWARDED			
								14,007		313,253 45	

Figure 2. Example of a Real Property Accountable Record (AF Form 1430).

- Cultural resources planning documents (historic preservation plans and historic and archaeological resources protection plans)
- Agreement documents (MOAs, PAs, mitigation plans, and decision papers)
- Historic context studies (installation specific) and installation histories
- Maintenance plans
- Architectural drawings (blue line or plan)
- Audiovisual materials
- Maps
- Aerial photographs
- Master plans
- Oral histories
- Photographs
- Real Property Accountable Records

Analysis

Analysis included data synthesis, evaluating the quality of responses, answering research questions, identifying any remaining data gaps, and conducting time and cost analyses. Data synthesis included digitizing hand-recorded data, removing uninventoried infrastructure from the facility data sheets, and finalizing all data sheets. Evaluating the quality of responses included comparing the data received to the data requested and making a qualitative judgment of the data content. The analysis also included answering the research questions and identifying any remaining data gaps. Finally, time and cost analyses were performed based on the hours recorded for specific tasks during this study.

Documentation

Documentation refers to this report, which describes the data-collection process, identifies and quantifies Cold War resources at four installations, analyzes time and costs, and makes recommendations. This report is the culmination of the research, analysis, and reporting of this study.

Results and Discussion

This chapter presents the detailed information on Cold War facilities at each of the four test installations and an analysis of the information collected.

Davis-Monthan AFB

Davis-Monthan AFB, an ACC installation, consists of 10,613 contiguous acres in the southeast corner of Tucson, Arizona, in Pima County (Lisa 2007:1). The NHL Titan II Missile Complex is a remote property south of main base on land owned by Davis-Monthan AFB and leased to Pima County. Although the “base has no administrative or oversight responsibilities to the complex or facility at this time” (Lisa 2007:A3-3), the property was part of the ACES-RP spreadsheet and included in this study.

SRI consulted with the natural/cultural resources manager, chief of real property, and chief of engineering technical support. The natural/cultural resources manager is a biologist with a multifunctional position. Only part of her time is devoted to CRM responsibilities. The base does not have a CRM library; the few cultural resources documents are kept in the natural/cultural resources manager’s office. The chief of real property keeps the hard-copy Real Property Accountable Records in facility-specific file folders that contain additional information related to the facility. The GIS analyst was a contractor.

Facility Data

The facility data at Davis-Monthan AFB were compiled using the ACES-RP spreadsheet, the ICRMP, and two inventory and evaluation reports. The ACES-RP spreadsheet listed 441 properties that were constructed during the Cold War from 1945 to 1991. This included 86 family housing buildings—houses and storage facilities dating from 1952 to 1986—that are not considered in this project. The number of infrastructure facilities could not be determined because these types of properties were not listed individually in ACES-RP. The natural/cultural resources manager does not maintain a CRM spreadsheet of built resources.

This study included 355 Cold War facilities. Three percent ($n = 11$) of these facilities have been evaluated for listing in the NRHP, leaving 344 Cold War facilities unevaluated. Of these unevaluated facilities, 91 are 50 years old or older. The NRHP status of the 11 evaluated facilities is as follows:

- 2 Individual NHL
- 1 Individual NRHP eligible
- 3 Recommended NRHP eligible
- 5 Recommended not NRHP eligible

Of the evaluated facilities, 27.3 percent ($n = 3$) have SHPO concurrence on the recommendations. Only 91.6 percent ($n = 325$) of the Cold War facilities were included on the base’s GIS layer (Figure 3).

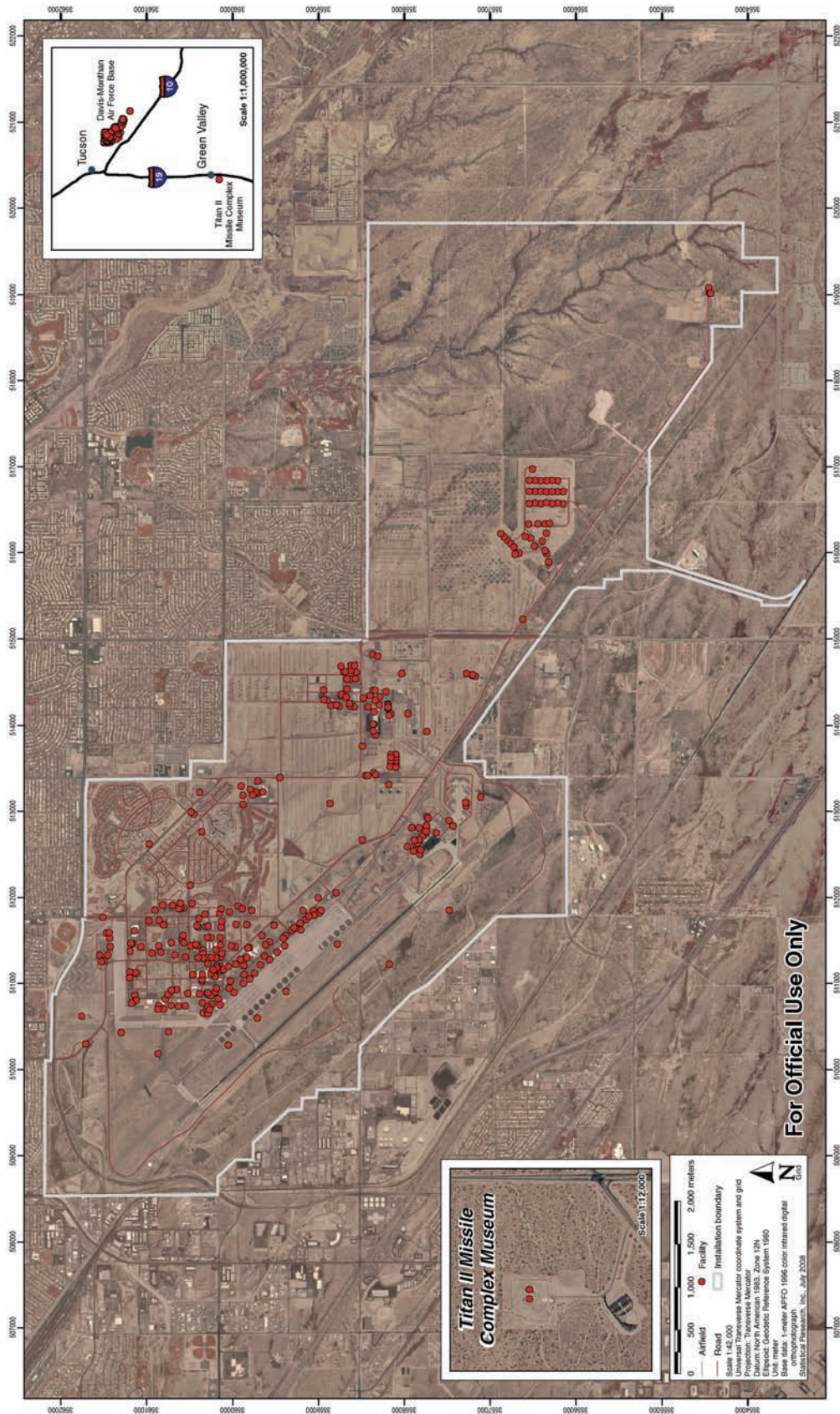


Figure 3. Davis-Monthan AFB Cold War facilities map.

Documentary Data

There are two inventory and evaluation reports that include Cold War properties at Davis-Monthan AFB, with one available electronically and the other available in a hard-copy format. The base has one NHL nomination for the Air Force Facility Missile Site 8 (571-7) that is available in a hard-copy format from the National Park Service. One installation history has been written and is available in an electronic format. Additional available documentation includes a partial set of hard-copy architectural drawings, hard-copy maps, electronic aerial photographs, and a hard-copy installation general plan.

Hill AFB

Hill AFB, an AFMC installation, administers 961,758 discontiguous acres. The 6,698-acre main portion of the base is located south of Ogden, Utah, in Davis and Weber Counties (U.S. Air Force, AFMC 2007:2-4). Properties administered by Hill AFB include the main base and 75 geographically separate units (GSUs, remote properties). Only nine GSUs have Cold War facilities and were included in this study: Boulder Seismological Research Site, Carter Creek Recreation Center, Confusion Peak Radio Relay Annex, Grassy Mountain Radio Relay Annex, Hill Instrument Landing System Middle Marker Annex, Little Mountain Test Annex, Utah Test and Training Range (UTTR) North, UTTR South, and Wendover Radio Relay Annex.

SRI consulted with the cultural resources manager (an archaeologist), the realty officer, a GIS specialist, and the historian. The cultural resources manager holds a full-time position, with only part of her time devoted to the management of built resources. The base has a well-organized CRM library, with the majority of documents digitized. The realty officer has a full hard-copy set of the Real Property Accountable Records in file drawers, as well as a partial digitized set. The GIS specialist is a contractor. The historian has a well-organized history office with a large library, map drawers, and photo files.

Facility Data

The facility data at Hill AFB were compiled using the ACES-RP spreadsheet, the ICRMP, four inventory and evaluation reports, and two working CRM MS Excel spreadsheets. The real property report listed 1,341 properties that were constructed during the Cold War from 1945 to 1991. This included 373 family housing buildings/structures—houses and carports constructed from 1963 to 1976—and 24 unevaluated infrastructure facilities that are not considered in this project. The CRM spreadsheets included one with Cold War properties data (created by a subcontractor) and one with all facilities. Merging the two data sets and eliminating duplicates created a CRM spreadsheet with 1,329 Cold War properties. One of the inventory and evaluation reports provided another 25 unnumbered facilities that were not included in ACES-RP or the CRM spreadsheets.

Discrepancies were resolved, and this study included 923 Cold War facilities. Of these, 97.4 percent (n = 899) have been evaluated for listing in the NRHP, leaving 24 Cold War facilities unevaluated, 9 of them 50 years old or older. The NRHP status of the 899 evaluated facilities is as follows:

- 41 Individual NRHP eligible
- 52 Contributing element of NRHP eligible district
- 1 Recommended contributing element of NRHP eligible district
- 117 Noncontributing element of NRHP eligible district
- 687 Determined not NRHP eligible
- 1 Recommended not NRHP eligible

Of the evaluated facilities, 99.8 percent (n = 897) have SHPO concurrence on the recommendations. Only 49.2 percent (n = 454) of the Cold War facilities were included on the base's GIS layer (Figures 4 and 5). The Hill Instrument Landing System Middle Marker Annex is not represented in Figure 5 because no GIS data were available for it.

Documentary Data

There are four inventory and evaluation reports that include Cold War properties at Hill AFB; all four are available in electronic format. The base has one electronic-format memorandum of agreement for the Explosive Clear Zone proposal for demolition. Two installation histories have been written and are available in hard copy. Additional available documentation includes electronic and hard-copy architectural drawings, electronic and hard-copy maps, hard-copy aerial photographs, hard-copy photographs, and a electronic installation general plan.

Kirtland AFB

Kirtland AFB, administered by AFMC, consists of 51,588 contiguous acres in southeast Albuquerque, New Mexico, in Bernalillo County (U.S. Naval Facilities Engineering Command, Pacific Division 2008: E-1). SRI consulted with the cultural resources manager (an archaeologist), the lead real estate assistant, and the architectural designer/supervisor. The cultural resources manager holds a full-time position, with only part of her time devoted to the management of built resources. The base has a CRM library, with all documents digitized. The lead real estate agent keeps the hard-copy Real Property Accountable Records in facility-specific file folders that contain additional information. The architectural designer/supervisor who provided GIS support is a contractor. The cultural resources section, real property, and GIS fall under the overarching Chugach Management Services, which provides civil engineering support for the base.

Facility Data

The facility data at Kirtland AFB were compiled using the ACES-RP spreadsheet, the ICRMP, 12 inventory and evaluation reports, and 1 working CRM MS Excel spreadsheet. The real property report listed 1,521 properties constructed during the Cold War from 1945 to 1991. This included 234 family housing buildings—houses constructed from 1947 to 1960 (all evaluated and determined not eligible for listing in the NRHP)—and 363 unevaluated infrastructure facilities that are not considered in this project. The CRM spreadsheet included 2,743 Cold War properties.

Discrepancies were resolved, and this study included 916 Cold War facilities. Of these, 87.1 percent (n = 798) have been evaluated for listing in the NRHP, leaving 118 Cold War facilities unevaluated, 32 of them 50 years old or older. The NRHP status of the 798 evaluated facilities is as follows:

- 68 Individual NRHP eligible
- 1 Recommended individual NRHP eligible
- 12 Contributing element of NRHP eligible district
- 497 Determined not NRHP eligible
- 220 Recommended not NRHP eligible

Of the evaluated facilities, 72.3 percent (n = 577) have SHPO concurrence on the recommendations. Only 33.3 percent (n = 308) of the Cold War facilities were included on the base's GIS layer (Figure 6).

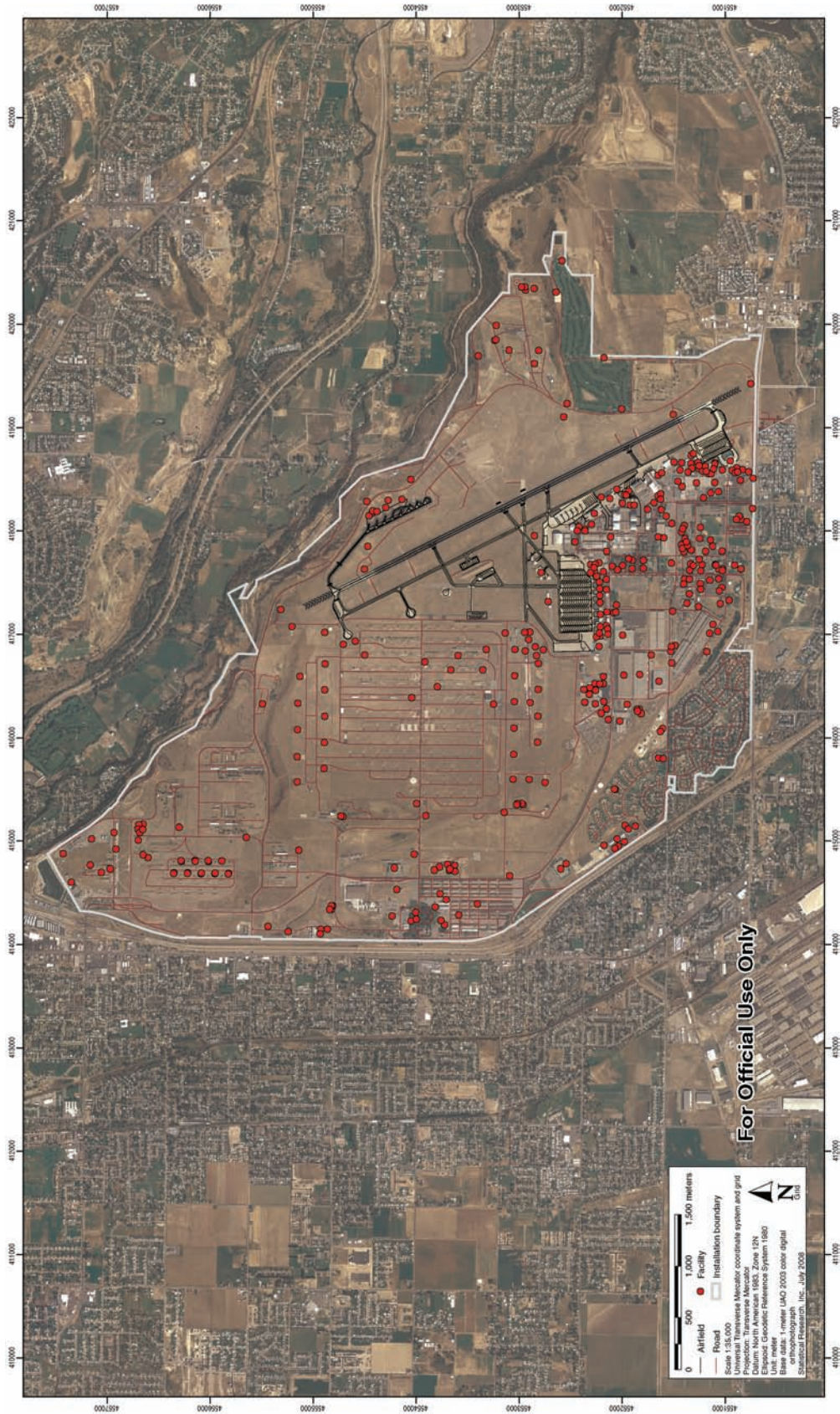
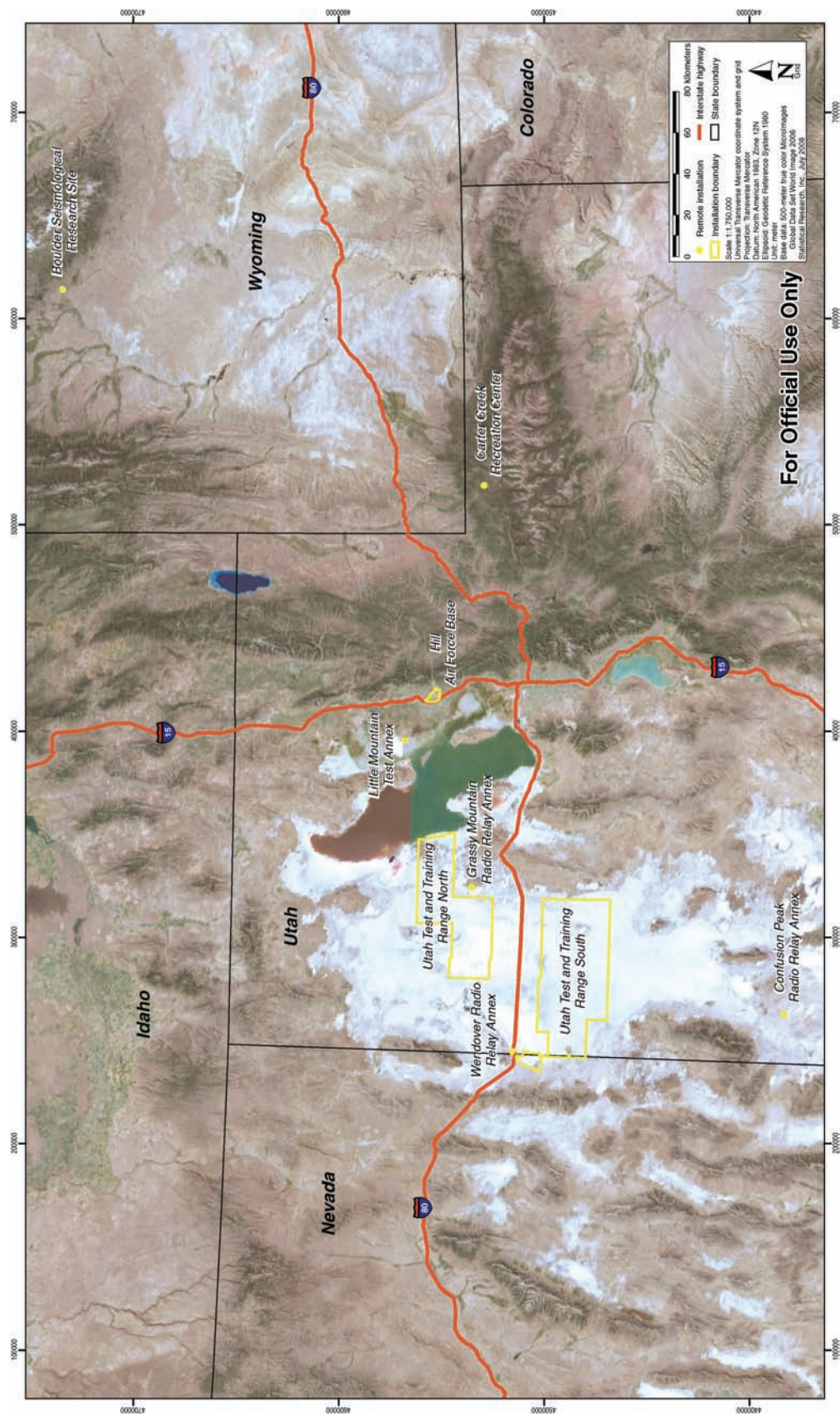


Figure 4. Hill AFB Cold War facilities map.



For Official Use Only

Figure 5. Hill AFB Remote Properties Cold War facilities map.

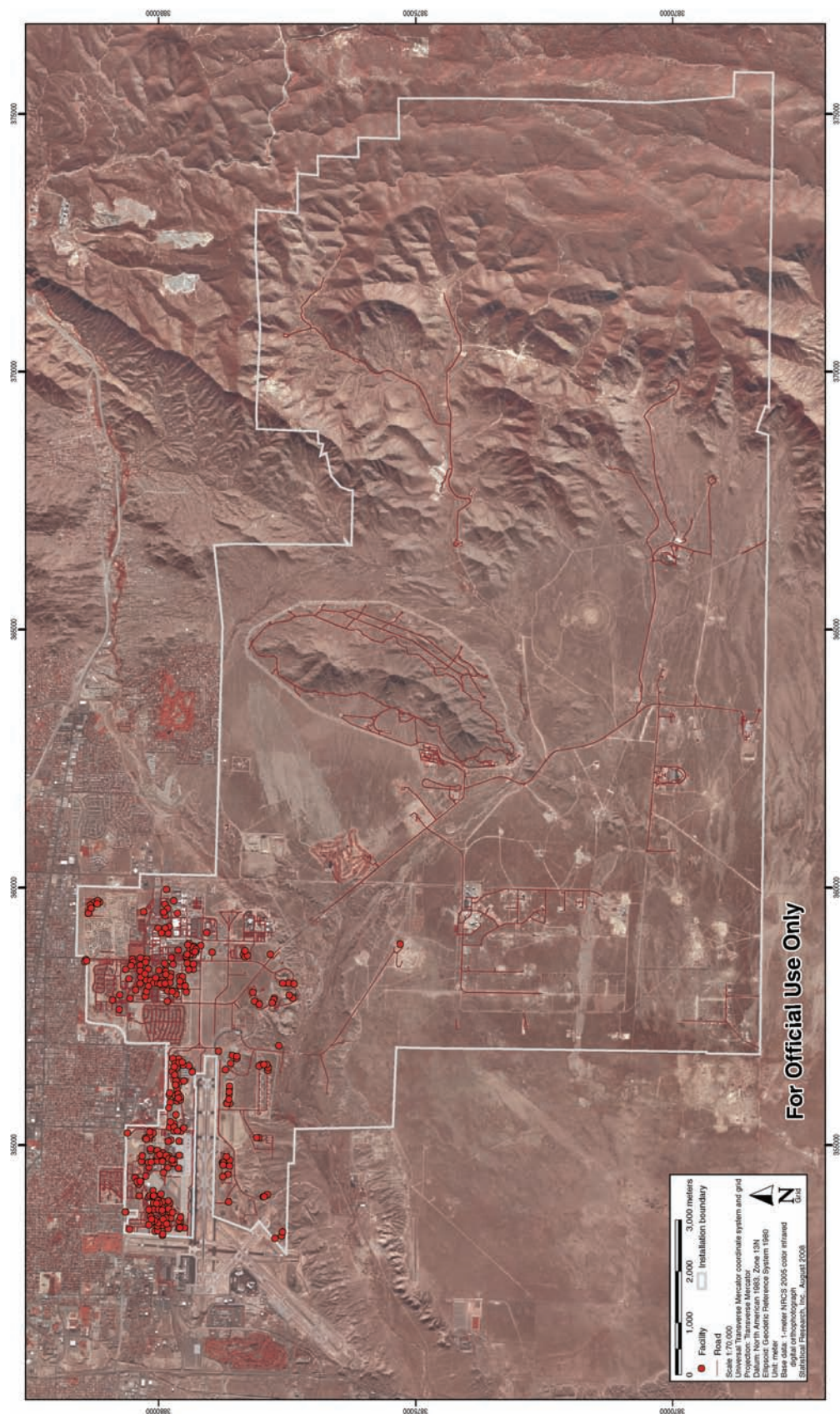


Figure 6. Kirtland AFB Cold War facilities map.

Documentary Data

There are 12 inventory and evaluation reports that include Cold War properties at Kirtland AFB, all available electronically. The base has one electronic HAER for Facility 20797, the trestle. One installation history has been written and is available in hard-copy. Additional available documentation includes electronic and hard-copy architectural drawings, audiovisual materials for the trestle and the VT Proximity Fuse area (Facilities in the 29000s), electronic and hard-copy maps, electronic aerial photographs, and a hard-copy installation general plan.

Vandenberg AFB

Vandenberg AFB, administered by Air Force Space Command (AFSPC), comprises 98,400 discontinuous acres, with the main base located northwest of Lompoc, California in San Luis Obispo County. The main base and four contiguous properties—Vandenberg Oak Mountain, Vandenberg Oak Mountain Annex Water Wells, Vandenberg Point Arguello Missile Tracking Site (MTK) 03, and Vandenberg Village Transmitter Site—are included in this study. Of the nine Vandenberg AFB GSUs with facilities, six included Cold War facilities and were part of this study: Ewa Deep Space Surveillance Site and Molokai Station in Hawaii and Pillar Point Air Force Station, Pillar Point Scarper Peak, Vandenberg Anderson Peak MTK 02, and Vandenberg Santa Ynez Peak MTK 04 in California.

SRI consulted with the cultural resources manager responsible for Cold War resources, a real property technician, and the geobase program manager at Vandenberg AFB. The cultural resources manager, a historic archaeologist and Cold War architectural historian, holds a full-time position and devotes most of his time to the management of Cold War resources. The section also includes a team-lead archaeologist, two prehistoric archaeologists, and a student intern. The base has a well-organized CRM library, but very few documents are digitized. The real property technician has a full hard-copy set of the Real Property Accountable Records filed in cabinets in numerical order and separated into extant and demolished facilities. The geobase program manager is a full-time department chief.

Facility Data

The facility data at Vandenberg AFB were compiled using the ACES-RP spreadsheet, the ICRMP, 22 inventory and evaluation reports, and an MS Excel spreadsheet of USACERL-evaluated Cold War facilities. The real property report listed 2,065 properties that were constructed during the Cold War from 1945 to 1991. This included 388 family housing buildings—houses and garages constructed from 1961 to 1969 (374 evaluated and determined not eligible for listing in the NRHP)—and 646 uninventoried infrastructure facilities that are not considered in this project. The cultural resources manager provided a spreadsheet of 330 facilities evaluated by USACERL and each facility's NRHP status, as reflected in a PA between Vandenberg AFB and the California SHPO regarding the management of exceptionally important Cold War properties. The inventory and evaluation reports include the evaluation of 54 unnumbered facilities, most not reflected in the ACES-RP spreadsheet.

Discrepancies were resolved, and this study included 1,123 Cold War facilities. Only 80.7 percent ($n = 771$) of the Cold War facilities were included on the base's GIS layer (Figures 7 and 8). Of the four bases included in the study, Vandenberg AFB is unique in that 100 percent of its 1,123 facilities have been evaluated for listing in the NRHP, with SHPO concurrence on all of them. The core of the inventory and evaluations is the four performed by USACERL. Their inventories and evaluations followed *Interim Guidance*, wherein buildings, structures, objects, sites, or districts must possess exceptional value or quality in illustrating the Cold War heritage of the United States (U.S. Air Force 1993:5). Therefore, "base exchanges, general administrative buildings, family housing, maintenance shops, sewage treatment plants, and similar facilities were excluded from the evaluation because they played secondary functions but did

Table 1. Air Force Base Diversity

Facility (AFB)	Major Command ^a	State	Base Size		
			Total Cold War Facilities ^b	Cold War Facilities Included in Project ^c	Inventory and Evaluation Reports
Davis-Monthan	ACC	Arizona	small ^d	small	small
Hill	AFMC	Utah	medium	medium	small
Kirtland	AFMC	New Mexico	medium	medium	medium
Vandenberg	AFSPC	California	large	large	large

^a ACC = Air Combat Command; AFMC = Air Force Materiel Command; AFSPC = Air Force Space Command.

^b Includes family housing and infrastructure.

^c Excludes family housing and infrastructure.

^d Infrastructure numbers not available at Davis-Monthan.

not support operational missions directly” (Moratto and Price 2005:2-2). Although this approach to evaluating Cold War facilities was not considered unique at the other three bases in this study, the resulting PA, for Vandenberg, was groundbreaking (Vandenberg AFB 2002). In short, not all properties have been inventoried, but the SHPO has concurred on all recommendations of eligible resources made by the CRM Section. This concurrence included the agreement that all other properties are determined not eligible. The NRHP status of the 1,123 evaluated facilities is as follows:

- 6 individual NHL
- 46 individual NRHP eligible
- 21 contributing element of NRHP eligible district
- 7 non-contributing element of NRHP eligible district
- 1,043 determined not NRHP eligible

Documentary Data

There are 22 hard-copy inventory and evaluation reports that included Cold War properties at Vandenberg AFB. There are three HAERs: Space Launch Complex (SLC)-3, SLC-10, and Peacekeeper. Two of these documents are electronic and one is a hard copy. There is an NHL nomination for SLC-10 in an electronic format. The base has a PA for the Cold War facilities. Two installation histories have been written and are available in hard copy. Additional available documentation includes an incomplete set of hard-copy and partial set of electronic architectural drawings, hard-copy maps, hard-copy and electronic aerial photographs, hard-copy and electronic photographs, and a electronic installation general plan.

Summary

This study attempted to reflect diversity in base command, location, and size (Table 1). The four bases belong to three different MAJCOMs in four different western states and vary in size (see Figure 1). Size was calculated in three ways:

- Number of individual Cold War facilities recorded in ACES-RP (including family housing buildings and infrastructure)
 - o Small (0–1,000)

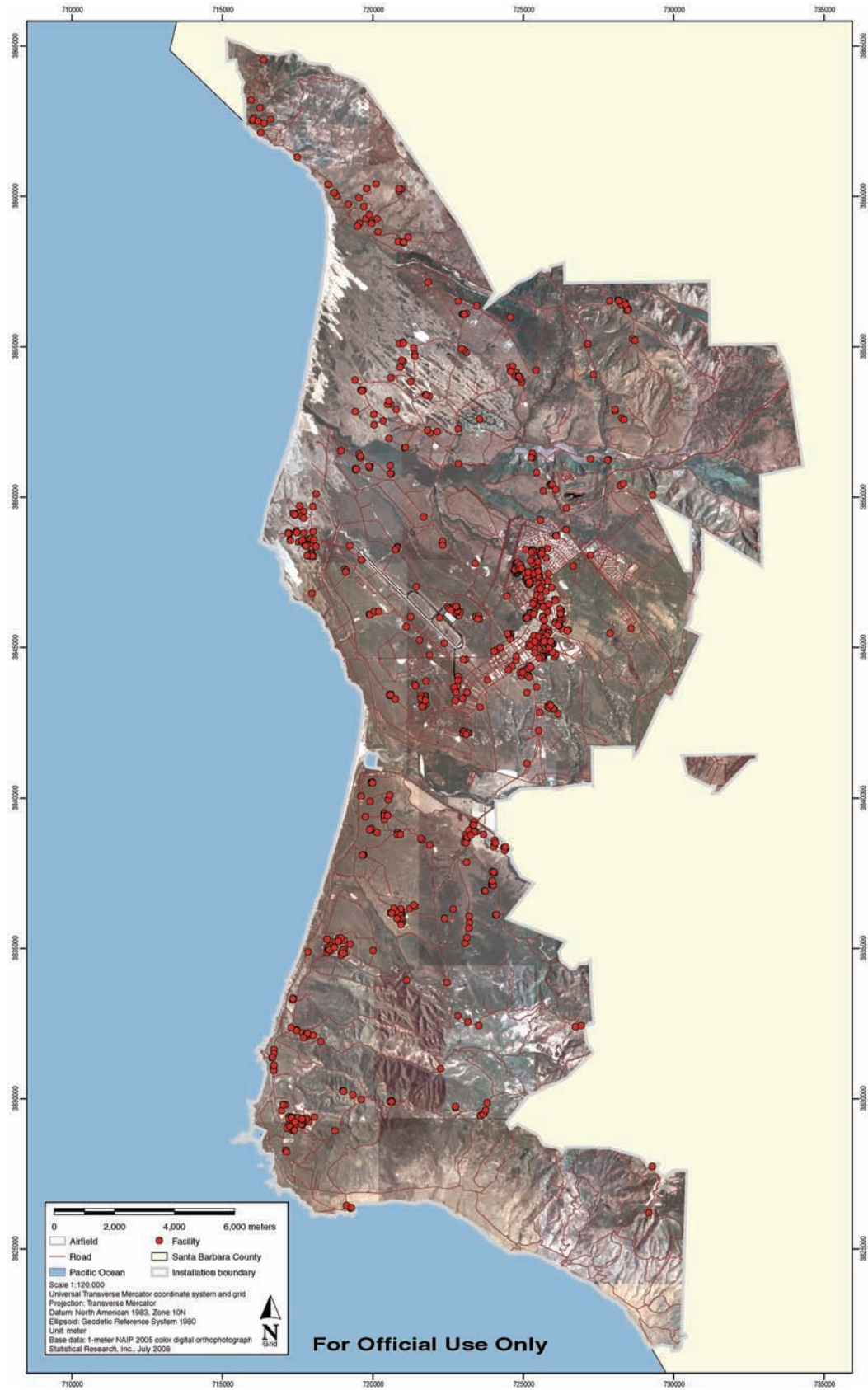


Figure 7. Vandenberg AFB Cold War facilities map.



Figure 8. Vandenberg AFB Remote Properties Cold War facilities map.

- o Medium (1,001–2,000)
 - o Large (2,001+)
- Number of Cold War facilities in study (excluding family housing buildings and infrastructure)
 - o Small (0–500)
 - o Medium (501–1,000)
 - o Large (1,000+)
- Number of inventory and evaluation reports
 - o Small (0–10)
 - o Medium (11–20)
 - o Large (21+)

Using these three different data sets, the dispersal of the participating bases was fairly consistent and averaged as follows: one was small (Davis-Monthan AFB), two were medium (Hill AFB and Kirtland AFB), and one was large (Vandenberg AFB).

The number of Cold War facilities at each base ranged from 355 to 1,123 and averaged 829 (Table 2). The percentage of facilities evaluated for NRHP eligibility ranged from 3 to 100 and averaged 71.9 percent. The percentage of evaluated facilities with SHPO concurrence ranged from 27.3 to 100.0 and averaged 74.9 percent. All four bases provided GIS layers, of which only 63.7 percent of the facilities within the study were mapped. The number of inventory and evaluation reports averaged 10 and ranged from 2 to 22, with 55 percent of them in hard copy only.

Conducting the data-collection process at four bases as a demonstration project allowed for the identification of some of the varying nuances of data management and organization between bases. SRI acquired data from the CRM, real property, and GIS offices at each installation, and from the history office at Hill AFB. The quality of responses was good; SRI received all requested data from all four bases.

With respect to the real property data, there were very few differences in the content of the ACES-RP spreadsheets received from each of the bases. The exception was that received from Davis-Monthan AFB. At that installation, the infrastructure is not separated into single line items like at other bases, but included as part of the data for its associated facility; therefore, there were no line items for infrastructure in the ACES-RP spreadsheet from Davis-Monthan AFB. At the other three bases, the real property data in ACES-RP is similar and itemized by facility type, such as (A) single-use building, (B) multi-use building, (C) land, (D) building users (the D line contains the sum of all the values in the B lines), (E) facilities other than buildings, (X) utility plants and systems in buildings, and (Z) removed facilities, such as family housing buildings. Preparing this data required culling C and D, and closely reviewing facility type Z. As noted earlier in this report, the original category and nomenclature codes are not in ACES-RP, but each of the four bases retains most, if not all, of the original Real Property Accountable Records, although Vandenberg AFB had been asked previously to dispose of them.

GIS data were not easy to acquire, as they are not coordinated with real property or CRM offices. Fortunately, each base was able to provide GIS layers, enabling SRI to create maps for each installation. Although many Cold War facilities were not included on the bases' GIS layers, it was not within the purview of this study to identify the reasons why.

The quality of data received from the cultural resources managers varied. With respect to the facility data, there were discrepancies at all bases that supplied CRM spreadsheets. The most common were the inconsistencies between the CRM and ACES-RP spreadsheets. Two of the bases—Hill AFB and Kirtland AFB—kept working spreadsheets of built-environment resources as a way to manage them. Hill AFB provided two—one for Cold War facilities (created by a subcontractor) and one for all facilities—and Kirtland AFB provided one for all facilities. Vandenberg AFB provided a list of resources evaluated by USACERL. Davis-Monthan AFB did not provide data, as they do not maintain a spreadsheet on the built environment. The discrepancies between the CRM and ACES-RP spreadsheets included unrecorded demolitions, incorrectly recorded construction dates, and recorded facility components that did not have distinct facility numbers. It became apparent during analysis that none of the CRM spreadsheets were updated as part of day-to-day operations. Conversely, ACES-RP had several incorrectly recorded

Table 2. Quantitative Analysis of Cold War Facilities

Facility (AFB)	Cold War Facilities from CRM Spreadsheet(s)	Cold War Facilities from ACES-RP Spreadsheet	Family Housing Buildings/ Structures	Infrastructure	Cold War Facilities in Study						
					Facilities That Are 50 Years Old or Older		Facilities That Are 50 Years Old or Older		NRHP Evaluated (%)	NRHP Evaluated with SHPO Concurrence (%)	Facilities with Locational Data (%)
					Total ^a	50 Years Old or Older	50 Years Old or Older	50 Years Old or Older			
Davis-Monthan	— ^b	441	86	— ^c	355	94	91	3.0	27.3	91.6	
Hill	1,329	1,341	373	24	923	92	9	97.4	99.8	49.2	
Kirtland	2,743	1,521	234	363	916	451	32	87.1	72.3	33.3	
Vandenberg	330	2,065	388	646	1,123	35 ^d	—	100.0	100.0	80.7	

^a Excludes family housing and infrastructure.

^b Davis-Monthan Air Force Base does not maintain a built-environment spreadsheet.

^c Davis-Monthan Air Force Base does not list infrastructure data as separate line items in ACES-RP.

^d Vandenberg Air Force Base has several facilities for which further research would be required to determine construction dates.

Table 3. Labor Metrics

Facility (AFB)	Administration (hours) ^a	Travel (hours) ^b	Data Collection (hours) ^c	Data Synthesis (hours) ^d	Total (hours)	Total per Cold War Facility (minutes)	Additional Work ^e		
							Data Collection (hours)	Data Synthesis (hours)	Additional Time per Cold War Facility (minutes)
Davis-Monthan	12	9	7	14	42	7.099	6	2	1.352
Hill	12	10	7	53	82	5.330	—	—	—
Kirtland	12	3	23	50	88	5.764	17	4	1.376
Vandenberg	12	13	26	47	98	5.236	—	—	—

^a Administration included correspondence, data requests and transfers, and data review.

^b Travel included both trip planning and travel time.

^c Data collection included preparation time and time expended at each base collecting the data.

^d Data synthesis included analyzing the data, resolving discrepancies, researching data gaps, creating datasheets, and calculating the results.

^e Additional work consisted of collecting original nomenclature from the Real Property Accountable Records.

construction dates reflecting transcription errors and transfer dates. SRI did note some discrepancies between the CRM spreadsheets and their original sources (inventory and evaluation reports). It was also noted that not all inventory and evaluation reports had been submitted to SHPO for concurrence. This was, admittedly, an oversight by the cultural resources managers and should be procedurally addressed. Bibliographic data were readily available, and only one missing report was noted.

With regard to information on documentary data, all of the cultural resources managers generously participated in the information survey. Although not an analytical tool, the survey data provided insight into the existence, availability, and location of Cold War resources at each base. The majority of these resources would be considered supporting documentation, though nonetheless pertinent to the understanding of Cold War facilities. Of the four bases, only Hill and Kirtland had all of their inventory and evaluation reports digitized. This was accomplished through direct efforts by the cultural resources manager at each installation.

Cost Analyses

Data collection at the four bases is the basis for the following cost analyses, presuming that the data are collected by a contractor instead of in-house personnel. Although it is a small sample, reviewing the expenses and labor hours expended for this study can provide parameters for the cost projections of future work. The following accounts of time reflect only that spent by SRI to conduct this study and does not include time expended by CRM, real property, or GIS staff. The activities at each base can be described as administration, travel, data collection, and data synthesis. Administration at each base included correspondence, data requests, data transfers, and data review. Travel included both trip planning and travel time. Data collection included preparation time and time expended at each base collecting the data from all of the offices—CRM, GIS, real property, and history. Data synthesis consisted of pulling the information together, researching and resolving discrepancies, creating data sheets, and performing calculations. Additional work consisted of the collection of original nomenclature from the Real Property Accountable Records at Davis-Monthan and Kirtland AFBs.

The time to complete the actual data-collection process at each base in this study ranged from 42 to 98 hours, or 5.2 to 7.1 minutes per Cold War facility (Table 3). The time to complete the additional work

Table 4. Predicted Costs

Facility Size	Labor						Expenses				Total
	Administration (hours)	Travel (hours) ^a	Data Collection (hours)	Data Synthesis (hours)	Total Hours ^b	Days	Labor	Per Diem	Airfare	Rental Car	
Small	12	12	16	16	56	4	\$5,600	\$600	\$1,000	\$400	\$7,600
Medium	12	12	32	56	112	6	\$11,200	\$900	\$1,000	\$600	\$13,700
Large	12	24	48	56	140	10	\$14,000	\$1,500	\$2,000	\$1,000	\$18,500

^a Travel time is doubled for large bases because the data collection extends into a second week and two trips are anticipated.

^b These totals include the additional work required to collect original nomenclature from the Real Property Accountable Records.

Table 5. Proposed DoD-Wide Data Collection Costs

DoD Installation Size	Number of Installations	Proposed Cost per Installation	Total Cost
Small	4,161	\$8,000	\$33,288,000
Medium	120	\$14,000	\$1,680,000
Large	111	\$19,000	\$2,109,000
Total	4,392		\$37,077,000

of collecting and synthesizing the original nomenclature at two bases ranged from 8 to 21 hours and increased the minutes per Cold War facility by 1.4.

Base size, in terms of data to be collected, is an important measure when trying to predict costs for future work. Using the size determinations above, proposed costs to continue this effort DoD-wide can be determined in terms of small, medium, and large bases. To develop the proposed costs, labor metrics were collected from this study and rounded up to the nearest day. The cost analysis was made using some general assumptions:

- Labor rate is \$100 per hour
- Roundtrip airfare costs \$1,000 each
- Per diem (lodging, meals, and incidentals) is \$150
- Rental car is \$100 per day

Table 4 provides general predictions of costs to conduct data-collection projects similar to this study at other bases. Rounding to the nearest \$1,000, the cost for small bases would be around \$8,000, for medium-sized bases around \$14,000, and for large bases around \$19,000.

There are inherent problems with these estimates. In general, the project will take less time if bases have well-organized and electronic data and more time if bases have disorganized files and no electronic data. In addition, the hours for data synthesis included time to resolve discrepancies, which may be minimized with a different approach. With better data-collection and synthesis methods, the time to conduct the data collection can be reduced.

These cost metrics can be used to make a rough estimate of what DoD might spend to complete similar data collection at all installations. The DoD had approximately 4,392 installations (with facilities) worldwide as of fiscal year 2008 (Office of the Under Secretary of Defense 2008:22). These installations were categorized as small, medium, and large based on plant replacement value, or the cost to replace all facilities and infrastructure, which is comparable to the size categories created during the current project. Multiplying the proposed cost per installation by the number of installation in each size class, DoD could spend as much as \$37 million to complete data collection on all installations (Table 5).

Data Inconsistencies and Gaps

This study identified a few problems with the data and defined a few remaining data gaps. Data inconsistencies included discrepancies between the CRM and ACES-RP spreadsheets, discrepancies between the CRM spreadsheets and the original source documents (inventory and evaluation reports), and the lack of complete GIS layers with locational data for all Cold War facilities in the study.

Discrepancies between the CRM and ACES-RP spreadsheets were mostly researched and resolved during the base visits, looking at all available data (e.g., Real Property Accountable Records and inventory and evaluation reports). They consisted of the following:

- Discrepancy: construction date
- Reasons:
 - date from ACES-RP reflected the date of transfer and not the date of construction as reflected in the CRM spreadsheet
 - transcription errors in ACES-RP
 - transcription errors in the CRM spreadsheet
- Discrepancy: current nomenclature
- Reasons:
 - ACES-RP information changed, and it was not updated in the CRM spreadsheet
 - contractors incorrectly interpreted the short form nomenclature from ACES-RP and provided the cultural resources manager with incorrect information
- Discrepancy: facility listed in CRM spreadsheet was not in ACES-RP
- Reasons:
 - incorrect construction date
 - facility had been demolished
 - facility is no longer managed by the real property office (i.e., family housing)
 - facility did not have a facility number and was not included in ACES-RP
- Discrepancy: facility in ACES-RP was not listed in CRM spreadsheet
- Reasons:
 - incorrect construction date
 - facility had never been inventoried or evaluated

Discrepancies between the CRM spreadsheet and the original source documents (inventory and evaluation reports) were researched and resolved during the base visits. These mostly consisted of incorrect transcriptions of construction dates and incorrect interpretations of current nomenclature. In less common cases, facilities had been evaluated, and they or their NRHP status was mistakenly omitted from the CRM spreadsheet. Another issue was that of eligibility. The CRM spreadsheet gave NRHP status as eligible or not eligible but did not provide the detail of whether an eligible property was individually eligible or a contributor to a district.

There was a lack of complete GIS layers with locational data for all Cold War facilities in the study. It was observed that the GIS, real property, and CRM staff do not coordinate their data. It is unknown why not all of the Cold War facilities have locational data.

Three data gaps have been identified within the scope of this project. First, properties constructed prior to World War II and reused during the Cold War are not included in this study. Second, some Cold War sites may not be included in an architectural evaluation or in ACES-RP because they are either archaeological sites or the locations of significant events or activities and thus may or may not have a built component or a facility number. These resources were not addressed in this report. Third, properties constructed just outside of the statutory Cold War era, namely from January–August 1945, were not included in this study. The month in which a facility was constructed was not included in the ACES-RP or the

CRM spreadsheets. The month of construction was typically listed on the Real Property Accountable Records, and this issue could be resolved by research of those records.

Although initially deemed a gap in the data because they are not available electronically, original nomenclature and category codes can be found on the Real Property Accountable Records. They are not as easily obtainable as electronic-format data, but they can be gathered by hand and ultimately do not constitute a data gap in this project. These data are integral to the eventual development of a list of Cold War property types and will be of use in future programmatic approaches.

Discussion of Research Questions

This data-collection study was guided by nine general research questions. This section briefly discusses the results of the study as they relate to those questions. In summary, the questions concerned:

- the number of extant facilities,
- the amount of completed inventories,
- the types of properties already inventoried and evaluated,
- the data that should be collected and in what format,
- the processes for collecting data and addressing data gaps,
- time and costs to collect the data, and
- how to make the data available to cultural resources managers across the DoD.

The number of extant facilities and the amount of completed inventories at each installation were accessible information, and Table 2 provides the results of that inquiry. Data about facilities were readily available in the CRM and ACES-RP spreadsheets. Identified inconsistencies and discrepancies were individually researched during the base visits, which proved a good method of resolving them. Inventory and evaluation reports were obtainable and provided in both electronic and hard-copy formats. The content and bibliographic data were easily accessed, and only one missing report was noted. For the bibliographic data in particular, SRI observed that some inventory and evaluation reports in the CRM libraries were missing from the ICRMP bibliographies.

Regarding the types of properties already inventoried and evaluated, the team determined that the data were not easily accessible. As discussed earlier, SRI presumed that original nomenclature and category codes would be included in ACES-RP, but this proved not to be the case. An effort was made to collect the nondigitized data from two installations—Davis-Monthan and Kirtland AFBs—to determine how much effort it would take to collect it. These data and the effort to collect them are important and are included to the extent possible in this study. A list of property types was not compiled during this project, but the original nomenclature for Davis-Monthan and Kirtland AFBs is given in Appendices A and C.

The collection of facility and documentary data provided valuable information through both its content and the methods by which it was collected. The content of the data provided answers to the research questions and allowed for the comparative analysis of data across the four installations. The process developed and used to collect the data, which centered on an initial data call and follow-up base visits proved sound, but could be improved upon. For instance, more time was needed for the bases to gather information for the initial data call, and the data call should be streamlined and more defined. This is possible now that the realm of data and the data likely to be available has been defined and demonstrated. This project also allowed for the tracking of time and costs, reflected in Table 3, which provides for the projection of costs to continue this project across the DoD.

Although this project identified three data gaps, they remain unaddressed in this study. The gaps include properties constructed prior to World War II and reused during the Cold War, Cold War sites that are archaeological in nature or the locations of significant events or activities, and properties constructed

just outside of the statutory Cold War period. Methods to address them will need to be developed. Although not defined as a gap, it should be noted that there was a definite lack of coordination between the CRM, real property, and GIS offices at each installation. Although staff are familiar with each other and work together when required, their data are neither coordinated nor similarly maintained.

The question of making the data available to cultural resources managers across the DoD can be answered by the results of another Legacy-funded project (07-351), reported in *Guidance for CRM Information Clearinghouse* (Van Citters and Peak 2008). This project resulted in the creation of a Clearinghouse Advisory Group (CAG), consisting of DoD and private-sector individuals with expertise in cultural resources, data collection, and database management (including the coauthor of this report). The CAG developed a structure for CRM data, such as that collected during the current project; implemented the structure on DENIX; drafted a guidance document and tools to ensure consistency for uploading data to DENIX; encouraged CAG members who were at installations to upload their documents; and provided initial outreach to make DoD cultural resources managers aware of this online tool. Almost from the beginning of the current project, the goal was to use the process created by the CAG for storing collected data and making them available to interested parties. A follow-on project, *Managing Cultural Resources: Compiling and Storing the Data* (Van Citters and Tagg 2008), has been submitted to Legacy and is currently in the proposal stage. It will include uploading the Cold War data into DENIX, or whatever platform the DoD is using at the time.

Recommendations and Conclusions

Recommendations include those lessons learned from this project that should be considered for follow-on projects and those for future work that expand on the data-collection theme. The goals of follow-on projects should be to collect data through continually improved methods and to store that data in a CRM clearinghouse. This project has identified improved methods that will reduce the data-collection and synthesis time and, ultimately, costs.

First, creating the data sheet from scratch would be less time consuming than relying on the CRM spreadsheet and taking the time to confirm the data. The collection of the facility data should begin with the ACES-RP spreadsheet. Then, data from the inventory and evaluation reports should be added. This process was conducted as a secondary measure at two of the installations to combat the numerous discrepancies and proved faster than confirming the data.

Second, electronic data sheets should be created and taken to the bases during the visit so that direct data entry can be performed. This would refine the data entry process, eliminating the need to write or transcribe. Although this was the method followed for collection of the NRHP-status and report-citation data from the hard-copy inventory and evaluation reports, this method was not employed to collect the original nomenclature. In addition, a list of Cold War property types should be created using the original nomenclature data collected from Davis-Monthan and Kirtland AFBs. By creating a typology based on this list of original nomenclature codes, type data could be collected through electronic forms with drop-down menus.

Third, data in an electronic format are preferred, because they increase work efficiency and, if received during the data call, can eliminate travel time and expenses and allow for the identification of many data inconsistencies prior to base visits. Scanning hard-copy documents is a consideration for base visits. Numerous projects have completed hard-copy scanning, including a project at Kirtland AFB to digitize their CRM library. Methods employed in projects like this can be tried and improved upon.

Lastly, collected data should conform to the requirements and format needs of the CRM clearinghouse (see Van Citters and Peak 2008). This would allow the data to be easily transferred and decrease the duplication of work. Methods should be modified to streamline this process, including creating data-collection forms that correspond to the data formats in DENIX, or whichever platform DoD will use in the future.

Future work can expand on this project's theme. Additional ideas include going beyond the collection of Cold War resources and documenting World War I and II facilities and their supporting documentation. Other projects could focus on collecting the supporting or supplemental documentation, including aerial photographs or maps. As mentioned above, the continuation of this project and merger with the CRM Clearinghouse project has been proposed to Legacy and is currently being considered for funding (Van Citters and Tagg 2008). This proposed project is a second step in the process that will both improve and refine the data-collection process, as well as integrate it into a data-storage clearinghouse.

Summary

The DoD recognizes the need to inventory the large number of Cold War properties administered by the military, but also realizes that it must establish guidance to ensure the task is completed in a consistent, effective manner. Identifying and compiling available data on Cold War resources is a critical first step in developing a programmatic approach to the effective management of these resources. A second step is making the data available to installation-level cultural resources managers across the DoD. In the short term, access to the collected data will make their inventory and evaluation processes more time- and cost-efficient by decreasing duplication of effort and operation in a vacuum. In the long term, a CRM clearing-house provides a way to know what physical properties and documentation exist, which will be critical to streamlining the inventory and evaluation process.

This project completed the first step while keeping the second step in mind. This study had three goals: (1) to identify DoD Cold War facilities and associated documentation; (2) to create a systematic approach for identifying, compiling, and analyzing available data; and (3) to prepare time and cost metrics on the process. This demonstration project provided an opportunity for SRI to define clear data-collection methods and experience potential pitfalls. The goals were accomplished, as this study collected data on Cold War resources, provided the research necessary to create a systematic approach, and determined the best methods for and costs associated with collecting the data.

It was also determined, based on cost metrics, that DoD could spend up to \$37 million to complete similar data collection at all installations. Streamlining the data-collection and storage methods is a critical next step to make this process more time- and cost-effective. It will save the DoD money and ensure protection of those properties that are truly unique and significant. Knowing what information is available on Cold War properties will help the DoD and individual cultural resources managers determine which properties are significant, which properties require additional documentation, and how many examples of a particular property type should be considered for NRHP eligibility.