



# Department of Defense Legacy Resource Management Program

PROJECT 07-369

## **DoD Cultural Resources Data Management Needs Assessment Summary Report**

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## Acronyms

ACC	Air Combat Command
AEC	Army Environmental Center
AFB	Air Force Base
AFCEE	Air Force Center for Engineering and the Environment
AFSPC	Air Force Space Command
AIRFA	American Indian Religious Freedom Act
ANG	Air National Guard
ArCom	Archaeology Committee
ARPA	Archaeological Resources Protection Act
ASA-I&E	Assistant Secretary of the Army for Installations & Environment
CEG	Civil Engineer Group
CERL	Construction Engineering Research Laboratory
CR	Cultural Resources
DISDI	Defense Installation Spatial Data Infrastructure
DLA	Defense Logistics Agency
DoD	Department of Defense
ERDC	Engineer Research and Development Center
FGDC	Federal Geographic Data Committee
HA	Heritage Asset
HPWG	Historic Preservation Working Group
HQ	Headquarters
ICRMP	Integrated Cultural Resources Management Plan
IGI&S	Installation Geospatial Information & Services
IMA	Installation Management Agency
IMCOM	Installation Management Command
MCB	Marine Corps Base
MCX-CMAC	Mandatory Center of Expertise for the Curation and Management of Archaeological Collections
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NB	Naval Base
CNI	Commander, Navy Installations
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NPS	National Park Service
NR	National Register
NSA	Naval Support Activity
OACSIM	Office of the Assistant Chief of Staff, Installation Management
OASA-I&E	Office of the Assistant Secretary of the Army-Installations & Environment
OSD	Office of the Secretary of Defense
POC	Point of Contact
SDSFIE	Spatial Data Standards for Facilities, Infrastructure and Environment
SDSWG	Spatial Data Standards Working Group
USA	United States Army
USACE	United States Army Corps of Engineers
USAEC	United States Environmental Center

USAF	United States Air Force
USAR	United States Army Reserve
USMA	United States Military Academy
USMC	United States Marine Corps
USN	United States Navy
USNA	United States Naval Academy



## **1.0 Introduction**

This project assessed the current state of cultural resources data collection and management processes in the Department of Defense (DoD) and the elements associated with those processes, in order to develop minimum data standards needed to support the DoD cultural resources management program. The project centered around a facilitated discussion of DoD cultural resources management processes and associated data needs at the DoD and HQ Service level. This discussion developed minimum cultural resources standards focusing on spatial standards as a first priority. The results of this discussion are summarized below along with recommendations for continuing this process; in particular, we lay the groundwork for assessing the extent to which existing DoD cultural resources data comply with proposed minimum standards and with the Defense Installation Spatial Data Infrastructure (DISDI) Architecture and metadata standards. These results will also be used to recommend changes to the Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE) according to the identified minimum DoD standards needs.

## **2.0 Background**

DoD is responsible for thousands of historic properties of all kinds. Managing the information associated with these properties represents a formidable challenge. At present, the only formally adopted standard for cultural resources data within DoD is the SDSFIE. The SDSFIE includes multiple layers for cultural resources related data, but these components are problematic, and not sufficient to support all of DoD's cultural resources business data needs. The Federal Geographic Data Committee (FGDC) approved a National Park Service (NPS) proposal to develop a cultural resources spatial data standard in February of 2008. NPS plans to present a new standard to the FGDC Steering Committee by the end of 2010 (NPS 2008). Once adopted, that standard will be mandatory for all federal agencies. DoD has been invited to be a participant in that process along with other federal agencies. The Legacy program developed this project, in part, to develop a clear understanding of what DoD's needs would be relative to a federal cultural resources spatial data standard.

This project drew on the lessons learned from previous Legacy funded projects, particularly the efforts since 1998 by the USAF Air Combat Command (ACC) to develop a data model to be the cultural resources component of the enterprise information management system for environmental programs within the Air Force (USAF 2003, Crane 2007). These previous efforts provided valuable insights into DoD cultural resources management processes and the nature and extent of cultural resources electronic data in DoD. Those insights were drawn upon for a larger DoD and Service Headquarters level discussion that identified critical DoD cultural resources management processes, and the data elements required to support those processes.

### **3.0 Methodology**

The project approach consisted of several steps designed to acquire the sense of the field regarding DoD cultural resources data practices and needs. These steps included refining the project goals, creating a development process, presenting the project to a wide audience among DoD cultural resources personnel, forming a working group, and leading the working group through the standards development process. The development process consisted of four steps: identifying all of the cultural resources management processes in place at DoD installations along with their regulatory drivers; identifying the individual steps required to complete each process; identifying the data elements required to complete each step; and defining the minimum necessary characteristics and attributes needed to complete identified processes for spatial elements.

The project began with a project kickoff meeting in April 2007 where certain of the project goals and methods were redefined. Subsequently, Brian Crane of Versar worked with Paul Green of ACC to develop a simplified DoD list of cultural resources management processes. Brian Crane presented these to the Navy Cultural Resources Managers Workshop on May 10, 2007, and a joint meeting of the DoD Historic Preservation Working Group (HPWG) and Archaeology Committee (ArCom) on May 17, 2007. Following these meetings, Crane attended and helped facilitate the July 2007 data standards workshop at the Sustaining Military Readiness conference in Orlando, FL. The standards workshop provided a forum to present and brainstorm about the cultural resources processes, and to solicit volunteers for the Cultural Resources Spatial Standards Working Group.

In August 2007, Versar compiled feedback from the Data Standards Workshop, and then assisted in drafting an introductory memo and orientation materials for a Cultural Resources Spatial Data Standards Working Group (CRSDSWG). These materials outlined goals for the working group, created a schedule, and assigned initial tasks. Initial tasks consisted of reviewing the proposed cultural resources processes and their associated regulatory citations. Following completion of this task, Versar compiled input concerning cultural resources processes for distribution to the CRSDSWG, and provided examples of further requested feedback from the group on individual process steps. These steps were conducted via email exchanges among the group during the fall of 2007.

Once the individual process steps were drafted, Versar scheduled the first of three teleconferences. The first teleconference on January 14, 2008 reviewed and refined the individual process steps put forward by the working group. The meeting progressed to the identification of a preliminary list of data elements needed to support the identified process steps. Versar made a recording of the teleconference available to the group, and compiled input concerning cultural resources process steps and a preliminary list of identified data elements.

The second teleconference on March 4, 2008, focused on identifying the minimum cultural resources spatial elements needed to support DoD business practices. A



recording of the teleconference call was made available to the group, and plans begun for follow up work. Versar hosted a final teleconference with the group on April 16, 2008. This meeting focused on the minimum attributes needed to characterize the identified cultural resources spatial data elements. A recording of this teleconference was also made available to the group.

<b>Task</b>	<b>Action</b>	<b>Responsible Party</b>	<b>Date</b>
Review identified processes	Review identified processes for critical gaps; identify regulatory citations for the activity, and its mission relevance	Process Review (Working Group) Transmit to Crane ( <a href="mailto:bcrane@versar.com">bcrane@versar.com</a> ).	11/07/07
Compile and organize comments	Collect and compile comments from members; produce one revised list of business processes	Crane Transmit to Working Group	11/14/07
Process Steps	Identify specific steps in each process and the data required to carry out those steps	Define process steps (Working Group) Transmit to Crane ( <a href="mailto:bcrane@versar.com">bcrane@versar.com</a> ).	12/05/07
Compile Process Steps	Brian Crane will compile input received on detailed process steps and associated data elements	Input compilation (Crane)	12/31/07
Teleconference Meeting	Brainstorming meeting to discuss spatial data elements	Working Group	On or about 1/10/08
Compile Data Elements	Brian Crane will compile input received on data elements	Crane	1/24/08
Review identified elements	Review identified data elements for critical gaps	Process Review (Working Group) Transmit to Crane ( <a href="mailto:bcrane@versar.com">bcrane@versar.com</a> ).	2/25/08
Project Report	Report describing project and results	Crane	3/25/08 draft 5/9/08 final

#### **4.0 Cultural Resources Spatial Data Standards Working Group**

The members of the CRSDSWG as of May 2008 are shown in Table 2. Members were solicited during the 2007 Sustaining Military Readiness Conference in Orlando, FL, and subsequently from among cultural resources managers across the services. Members participated in the review of project materials via email and teleconference.

<b>Name</b>	<b>Service</b>	<b>Installation/Activity</b>	<b>Role</b>
Raymond Baker	USAF	Wright Patterson AFB	Member
Jim Barnes	USACE	M CX-CMAC Curation St Louis	Advisor
Robert Beardsley	USA	Fort Leavenworth	Member
Travis Beckwith	USA	USMA	Member
Serena Bellew	USA	IMA USAR	Advisor

<b>Table 2: Cultural Resources Spatial Data Standards Working Group Participants</b>			
<b>Name</b>	<b>Service</b>	<b>Installation/Activity</b>	<b>Role</b>
Lou Ann Broad	USN	USNA	Member
Douglas Burkett	USAF	HQ USAF	Advisor
Virginia Busby	USA	USAEC	Advisor
Paul Cedfeldt	USACE	Portland District	Member
George Cole	USAF	Eglin AFB	Member
Jim Copeland	USN	NAS Meridian	Member
Brian Crane	Contractor	Versar, Inc.	Leader
Richard Davis	USA	Fort Campbell	Member
Jim Dolph	USN	Portsmouth Naval Shipyard	Member
Natalie Drew	USACE	St. Louis District	Member
Beth Erickson	USA	NGB	Advisor
Lee Foster	USA	OACSIM	Advisor
Andrew Gomolak	USAF	Holloman AFB	Member
Sue Goodfellow	USMC	HQ USMC	Advisor
Layna Goodman	USN	NB Kitsap	Member
Paul Green	USAF	HQ ACC, USAF	Leader
Brian Greer	USA	Fort Stewart	Member
Jennifer Groman	USA	AEC	Member
John Haynes	USMC	MCB Quantico	Member
Carol Heathington	USAF	Luke AFB	Member
Cheryl Huckerby	USA	NGB	Advisor
Dave Labranche	Contractor	DISDI	Leader
Kristin Leahy	USA	NGB	Advisor
Renee Lewis	USA	Fort Gordon	Member
Brian Lione	OSD	OSD	Leader
Gail Littlefield	USN	NAVFAC	Advisor
Brian Lusher	USN	NAVFAC	Advisor
George Mankowski	USN	NSA Crane	Member
Bill Manley	USN	NAVFAC Southwest	Member
Tom Mayes	USN	NAVFAC HQ	Member
Pat McCoy	USA	HQ IMA	Advisor
Chris McDaid	USA	IMCOM-Northeast	Member
Meg McDonald	USMC	Yuma Proving Ground	Member
Kathleen McLaughlin	USN	NAVFAC	Advisor
Toni Patton-Williams	USA	OASA-I&E	Advisor
Brad Perkl	USACE	St. Paul District	Member
Brian Pettitt	USN	NAVFAC Far East	Member
Andrea Pierce	USN	Portsmouth Naval Shipyard	Member
Chris Pulliam	USACE	MCX Curation St Louis	Advisor
Rachel Quist	USA	Dugway Proving Ground	Member

<b>Table 2: Cultural Resources Spatial Data Standards Working Group Participants</b>			
<b>Name</b>	<b>Service</b>	<b>Installation/Activity</b>	<b>Role</b>
Coral Rasmussen	USMC	MCB Hawaii	Member
Matthew Rector	USA	Fort Knox	Member
Leonard Richeson	OSD	OSD	Advisor
Paul Rubenstein	USACE	HQ USACE	Advisor
Jeffrey Rust	USA	Dugway Proving Ground	Member
William Sames	DLA	Fort Belvoir	Member
David Sanborn	OSD	OSD	Advisor
Hillori Schenker	OSD	OSD/Legacy	Advisor
Adam Smith	USACE	ERDC-CERL	Member
Bill Spicer	USN	CNI	Advisor
Mark Stanley	USAF	CEG/CEVH	Member
Sara Streff	USA	ASA-I&E	Advisor
Maureen Sullivan	OSD	OSD	Leader
Jay Thomas	USN	NAVFAC HQ	Member
Brian Thompson	USN	NAVFAC MidLant	Member
Michael K (Sonny) Trimble	USACE	St. Louis District	Member
Richard White	USA	HQ IMA USAR	Advisor
Jim Wilde	USAF	AFCEE	Member
Vicki Williams	USAF	HQ AFSPC/A7AN	Member
Mona Wright	USACE		Member
Jane Yagley	USAF	HQ ANG	Advisor

## **5.0 Identified Processes**

The project identified 26 individual processes in all. The effort to identify these processes began with a candidate list generated by ACC during its effort to develop a cultural resources data management system (USAF 2006). These processes, as amended by the working group, are summarized in Table A-1. Table A-1 includes the 26 processes grouped into three categories: processes related to cultural resources inventory, those related to project review/compliance, and those related to management and planning. Many of the listed processes relate to various reporting requirements. Table A-1 also includes the statutory, regulatory, DoD and service-specific citations that require each process. The former are primarily the National Historic Preservation Act (NHPA), the Archaeological Resources Protection Act (ARPA), The Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), and the National Environmental Policy Act (NEPA), and their associated implementing regulations. These processes are intended to be a comprehensive list of the cultural resources management activities routinely engaged in by DoD personnel that derive from cultural resources related laws and regulations.

## 6.0 Process Steps

Once the basic common cultural resources business processes were identified, the working group turned to the effort of breaking each process down into individual steps. Appendix A includes the step by step breakdown of each of the processes outlined in Table A.1. Breaking each process down into its component steps was necessary in order to identify the specific data needs involved for each. Input was solicited from the working group, responses were then compiled, and reviewed via conference call. The tables in Appendix A list the individual steps, the individual or organization responsible for the step, any specific data requirements, and comments about each, all according to input received from the working group. The ‘responsible party’ column is frequently incomplete, though the majority of the steps identified are primarily the responsibility of the installation cultural resources manager (or functional equivalent).

## 7.0 Draft Data Standard

CRSDSWG review of the process steps and associated requirements yielded a preliminary list of data elements used to support cultural resources work. These were compiled and distributed to the working group for additional input, then reviewed over the course of two teleconferences. These are shown in Table 3. In reviewing this list, several proposed entities were eliminated. Real Property data (facility numbers, parcel numbers) are important in cultural resources reporting, but those datasets are maintained by real property personnel and standards. Likewise, environmental data like slope, soils and surface water, while important in cultural resources management, are data sets maintained by others outside cultural resources management. The group considered that the term Heritage Asset is not very clearly defined as yet, and adequately covered by the other elements included. Similarly, Disturbed Areas was recommended to be subsumed under the data element Cleared Areas. A number of potential elements were also eliminated from consideration at this stage because they lack a spatial component (i.e., Artifact Inventory, Human Remains Inventory, Building Contributing Elements, Survey Reports, Correspondence, Integrated Cultural Resources Management Plan (ICRMP), Affiliated Tribes, Cultural Affiliations, State Standards, Agreement Documents, POC list, Curatorial Facility, and Historic Contexts). ARPA violations were thought to be better included as an attribute of archaeological sites than as a separate coverage. Other elements were considered useful, but either not strictly required, or too installation-specific to be an appropriate part of a standard. These include: test locations, ICRMP Spatial Extent, Agreement Documents Spatial Extent, Historical Topography, Historical Water, Historical Events, and Historical Maps.

<b>Data Element</b>	<b>Notes</b>
Archaeological Sites	Y
Inventoried Buildings/Structures	Y

<b>Table 3: Preliminary Data Elements</b>	
<b>Data Element</b>	<b>Notes</b>
Historic Properties	Y
Real Property List	N, Maintained By Others
Sacred Sites	Y
Heritage Asset	N, Subsumed By Other Elements
Traditional Cultural Resource	Y
Cemeteries (or burial site)	Y
Districts	Y
Objects	Y
Underwater Sites	Y
Isolated Finds	Y
Historic Landscapes	Y
Artifact Inventory	Non-Spatial
Human Remains Inventory	Non-Spatial
Building Contributing Elements	Non-Spatial
Survey Areas	Y
ARPA Violations	N, Better As Attribute of Arch Sites
Test Locations	Useful, Not Strictly Necessary.
Survey Reports	Non-Spatial
Area of prior tribal use or occupation	Y
Probability Areas/Areas of Concern	Y
Disturbed Areas	Split Between Probability Areas And Cleared Areas
Restricted Areas	Y
Cleared Areas	Y
ICRMP Spatial Extent	N, Too Installation Specific
Agreement Documents Spatial Extent	N, Too Installation Specific
Correspondence	Non-Spatial
ICRMP	Non-Spatial
Affiliated Tribes	Non-Spatial
Cultural Affiliations	Non-Spatial
State Standards	Non-Spatial
Agreement Documents	Non-Spatial
POC list	Non-Spatial
Curatorial Facility	Non-Spatial
Slope	N, Maintained By Others
Surface Water	N, Maintained By Others
Soils	N, Maintained By Others
Historical Topography	Combine With Historical Map Imagery
Historical Water	Combine With Historical Map Imagery
Historic Contexts	Non-Spatial
Historical Events	Combine With Historical Map Imagery
Historical Maps	Combine With Historical Map Imagery

Discussion focused on spatial elements that the group agreed were required. These discussions considered the topology needed to represent the data, whether certain entities could be combined with others, and what should be considered minimum attributes of

each. Table 4 includes a list of those data elements the working group agreed should be considered required, along with various notes contributed about those elements from group members.

<b>Table 4: Final Data Elements</b>		
<b>Data Element</b>	<b>Geometry (Point, Line, Polygon)</b>	<b>Member Comments</b>
Archaeological Sites	Point or Polygon	Break out separately as different property types (site, building, district, object, landscape). Insert link to management data as an attribute for all It is imperative that contractors properly map sites in the field. link to artifact inventory with capability to map x,y,z coordinates in GIS
Inventoried Buildings/Structures	Polygon.	Polygon should be taken from "structure_existing_site"
Historic Properties	Point or Polygon	Break out separately as different property types (site, building, district, object, landscape). Polygon should be taken from "structure_existing_site"
Sacred Sites	Point or Polygon	This is not the same as landscape or site. Include a link to agreement document in management documents outlining access/protection
Traditional Cultural Resource	Point or Polygon	Consider renaming Traditional Cultural Property to Traditional Cultural Resource. Include a link to agreement document in management documents outlining access/protection
Cemeteries (or burial site)	Point or Polygon	Burial site may be a better umbrella term than cemetery, though cemetery may better capture the architectural dimension of some burial locations.
Districts	Point or Polygon	Break out separately as different property types (site, building, district, object, landscape). link to management documents with formal determination or designation
Objects	Point or Polygon	Break out separately as different property types (site, building, district, object, landscape). link to management documents with formal determination or designation
Underwater Sites	Point or Polygon	Combine with archaeological sites. link to artifact inventory with capability to map x,y,z coordinates in GIS
Isolated Finds	Point	Combine with archaeological sites. link to artifact inventory with capability to map x,y,z coordinates in GIS
Historic Landscapes	Polygon	Need to consider what the relationship is to TCPs. Include a link to management documents with formal determination or designation
Survey Areas	Polygon.	E.g. Subtypes = Probability, Disturbed, Active Study, Cleared, etc.
Area of prior tribal use or occupation	Point or Polygon	Note overlap with historic maps
Probability Areas/Areas of Concern	Polygon.	These may be more than is needed Required only if supported by sufficient input data. E.g. Subtypes = Probability, Disturbed, Active Study, Cleared, etc.
Restricted Areas	Polygon.	E.g. Subtypes = Probability, Disturbed, Active Study, Cleared, etc.
Cleared Areas	Polygon.	Could be combined with probability. E.g. Subtypes = Probability, Disturbed, Active Study, Cleared, etc.

The final teleconference for the working group focused on discussing minimum attributes for the proposed data elements. Table 5 includes element attributes as proposed by the

working group. These attributes include those proposed by working group members prior to the meeting, and those suggested during the course of the conference call.

<b>Table 5: Data Attributes Proposed by the CRSDSWG</b>	
<b>Data Element</b>	<b>Minimum Attributes</b>
Archaeological Sites	<ul style="list-style-type: none"> <li>• Site name/number</li> <li>• National Register (NR)/Heritage Asset (HA) status</li> <li>• Date of significance</li> <li>• Type of significance</li> <li>• Date of NR determination</li> <li>• link to management documents</li> <li>• Recordation date</li> <li>• ARPA violations</li> <li>• Site Depth</li> </ul>
Inventoried Buildings/Structures	<ul style="list-style-type: none"> <li>• NRHP Status</li> <li>• Building Type/Cat Code</li> </ul>
Sacred Sites	<ul style="list-style-type: none"> <li>• NR/HA status</li> <li>• NR site name</li> <li>• Cultural affiliation</li> <li>• Category (historic/prehistoric)</li> <li>• Type (site, district, building, structure, object, monument, landscape, property)</li> <li>• Type of significance (prehistoric, historic, archaeological, architectural, cultural, engineering, funerary)</li> <li>• Physical location (surface/subsurface)</li> <li>• Date recorded</li> </ul>
Traditional Cultural Resource	<ul style="list-style-type: none"> <li>• NR/HA status</li> <li>• NR site name</li> <li>• Cultural affiliation</li> </ul>
Cemeteries (or burial site)	<ul style="list-style-type: none"> <li>• NR/HA status</li> <li>• NR site name</li> <li>• Cultural affiliation/dates</li> <li>• Marked or Unmarked</li> <li>• Extant or Exhumed</li> </ul>
Districts	<ul style="list-style-type: none"> <li>• NR/HA status</li> <li>• NR site name</li> <li>• Theme</li> <li>• Date of significance</li> <li>• Date of designation or determination</li> </ul>
Objects	<ul style="list-style-type: none"> <li>• NR/HA status</li> <li>• NR site name</li> <li>• Theme</li> <li>• Date of significance</li> <li>• Date of designation or determination</li> </ul>
Historic Landscapes	<ul style="list-style-type: none"> <li>• NR/HA status</li> <li>• NR site name</li> <li>• Cultural affiliation/dates</li> </ul>

<b>Data Element</b>	<b>Minimum Attributes</b>
Survey Areas	<ul style="list-style-type: none"> <li>• Installation name and code</li> <li>• Type of Survey</li> <li>• Dates of Survey</li> <li>• Real-estate parcel name/number</li> <li>• NHPA compliance</li> <li>• Link to management documents</li> <li>• Characterization determination (potential, sites, requires NR determinations, etc.)</li> </ul>
Area of prior tribal use or occupation	<ul style="list-style-type: none"> <li>• Installation name/code</li> <li>• Cultural affiliation</li> <li>• Date(s) of use/occupation (or temporal affiliation)</li> <li>• Nature of use</li> <li>• Source of information</li> </ul>
Probability Areas/Areas of Concern	<ul style="list-style-type: none"> <li>• Installation name/code</li> <li>• Date(s) of use/occupation (or temporal affiliation)</li> <li>• Nature of use</li> <li>• Category (historic/prehistoric)</li> <li>• Type (site, district, building, structure, object, monument, landscape, property)</li> <li>• Type significance (historic, archaeological, architectural, cultural, engineering)</li> <li>• Physical location (surface/subsurface)</li> </ul>
Restricted Areas	<ul style="list-style-type: none"> <li>• Installation name and code</li> <li>• Types and dates of restriction(s)</li> <li>• Nature of restriction</li> </ul>
Cleared Areas	<ul style="list-style-type: none"> <li>• Installation name and code</li> <li>• Date(s) of survey(s)/clearance</li> <li>• Link to management documents with SHPO concurrence</li> </ul>

Because many of the suggested attributes from the group were similar, the proposed elements have been grouped together according to shared attributes. To assist in grouping related elements, two broader element categories were added: Cultural Resources and Management Areas. The relationships among the proposed elements are shown in Figure 1. The elements proposed by the group are shown in white, and the added element categories in blue. Archaeological sites, historic landscapes, burial sites/cemeteries, districts, objects, traditional cultural resources, and sacred sites are all grouped under cultural resources, with common attributes shown in the shared table. Element specific attributes (e.g. ownership for objects) are shown with their respective elements. Area of tribal use or occupation, cleared areas, restricted areas, and Probability areas/areas of concern are shown related to management areas. The relationships between the proposed elements and their respective categories are one-to-one (1:1). Because some relationships are one-to-many (1:N) (e.g. between Study Areas and Cultural Resources), additional conceptual tables have been introduced into the model to break each 1:N relationship into two 1:1 relationships. Figure 1 shows an entity relationship diagram of the entities and attributes. Appendix B lists the recommended minimum attributes for each of the elements, and presents the information presented in



Figure 1 in tabular form. Appendix B includes descriptions of the tables, attributes, and relationships in the draft standard, but is not intended to be a complete database design. It does not include information about potential data types, primary keys, or constraints as those were not defined by this project.

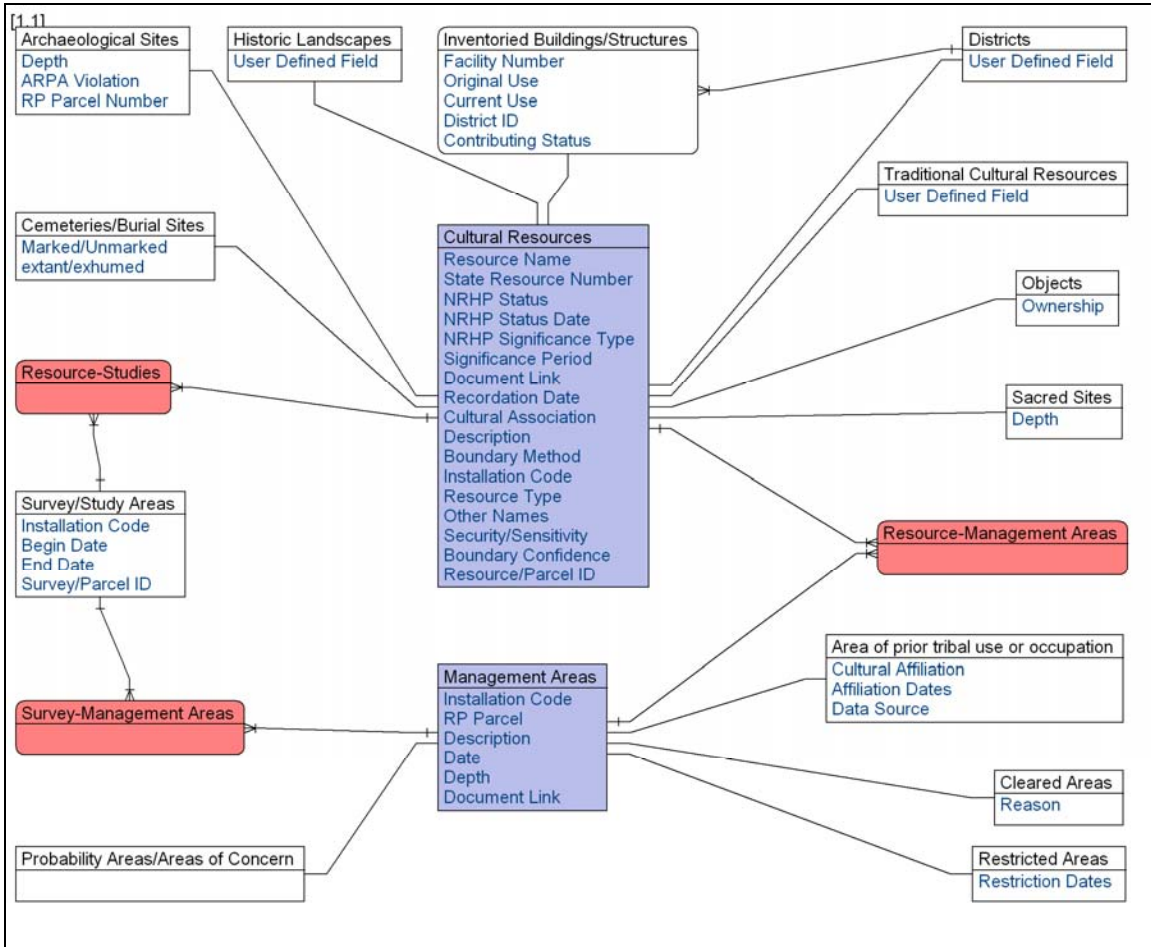


Figure 1: Proposed Entity Relationship Diagram of proposed entities and attributes.

The ability to track areas that have been cleared of any further cultural resources requirements, and those that still require additional work or consultation, was identified by the working group as very important. Two complimentary data elements are introduced here to display these data: Cleared Areas and Restricted Areas. Cleared areas would include all those areas of an installation removed from cultural resources consultation requirements for any reason (already surveyed, and found not to have resources, shown to be heavily disturbed, or be unsurveyable because of slope, surface water, or significant safety concerns). Restricted areas would include all those areas that still require further cultural research or consultation, either because it is surveyable but not yet surveyed, or it contains eligible or unevaluated cultural resources identified within it. Cleared Areas and Restricted Areas would be mirrors of each other, and it might not

be necessary for an installation to maintain both, but an installation could choose to maintain one or the other, depending on past practice or local need. Probability Areas/Areas of Concern includes those regions of an installation that research has shown to have some potential for the presence of cultural resources; the intended goal is to guide future survey work.

## **8.0 Next Steps**

The next stage in the standards development project will be to develop cultural resources non-spatial business data standards. This project will continue the assessment of DoD cultural resources data collection and management processes and the elements associated with those processes, in order to develop minimum business data standards needed to support the DoD cultural resources management program. This discussion will include a focus on those elements listed above in Table 4, but not included among recommended spatial entities. The results of the cultural resources process and data standard discussion will be summarized in a report that will include recommendations for completing the standards development process, and lay the groundwork for assessing the extent to which existing DoD cultural resources data comply with the DISDI Architecture, the Components' Installation Geospatial Information & Services (IGI&S) Architectures, and metadata standards. This effort will also continue to provide support as needed to the planned revisions to the cultural resources component of the SDSFIE.

## **9.0 References**

Crane, Brian

2007 Artifact Collection Data Integration MCRAD Phase II, Summary Report. Legacy Project 06-318.

United States Air Force

2003 Military Cultural Resources Analysis Database Implementation Report. Langley AFB, Virginia: HQ Air Combat Command/CEVP.

United States Air Force

2006 Military Cultural Resources Analysis Database Progress Summary Report. Langley AFB, Virginia: HQ Air Combat Command/A7VS.

National Park Service

2008 Cultural Resource Geospatial Data Content Standard. Proposal presented to the Federal Geographic Data Committee.

## **Appendix A**

### **Cultural Resources Processes and Process Steps**



<b>Table A.1 Cultural Resources Mangement Processes and Citations</b>								
	<b>Process Description</b>	<b>Resource Type</b>	<b>Statutory/Regulatory Citation</b>	<b>DoD Citation</b>	<b>USAF Citation</b>	<b>USA Citation</b>	<b>USN Citation</b>	<b>Marine Corps Citations</b>
<b>Inventory</b>								
1	Identify all types of cultural resources and evaluate them for National Register eligibility	All types of cultural resources (including Sacred Sites, Historic Properties, Cultural Landscapes, etc.)	NHPA Sec 106 and Sec 110; 36 CFR 800.4(b); E.O. 11593, Sec 2(a); ARPA Sec 14(a),(b); NEPA	DoDI 4715.3: D.3.a, D.3.d., F(1)(h)(3)	AFI 32-7065: 2.1-2.2	AR 200-1	SECNAVINST 4000.35A: 5.d, f; 6.h; OPNAV 5090.1B	MCO 590.2A
2	Develop inventory of human remains and associated funerary objects; develop summary of unassociated funerary objects, sacred objects and cultural patrimony	NAGPRA Cultural Items	NAGPRA Sec 5-6	DoDI 4710.02: E.3.2	AFI 32-7065: 2.1.6.	AR 200-1		MCO 590.2A
3	Inventory historic and cultural resources in areas under DoD control; take into account any property listed on the World Heritage List or on the foreign host nation's equivalent of the National Register of Historic Places	All types of cultural resources		DoD 4715.05-G, C12.3			OPNAV 5090.1B	
<b>Project Review</b>								
4	Avoid, minimize, or mitigate adverse effects (Section 106 Review)	All types of NRHP Eligible cultural resources and sacred sites	NHPA Sec 106; 36 CFR 800; E.O. 13007, Sec 1		AFI 32-7065: 3.1, 4.15.3; AFI 32-1001, Sec C, 6.4	AR 200-1	SECNAVINST 4000.35A: 5.d; OPNAVINST 1100.17; OPNAV 5090.1B	MCO 590.2A

<b>Table A.1 Cultural Resources Mangement Processes and Citations</b>								
	<b>Process Description</b>	<b>Resource Type</b>	<b>Statutory/Regulatory Citation</b>	<b>DoD Citation</b>	<b>USAF Citation</b>	<b>USA Citation</b>	<b>USN Citation</b>	<b>Marine Corps Citations</b>
5	Provide data for use in the NEPA process	All types of significant cultural resources	40 CFR 1500-1508; 32 CFR 651	DoDI 4715.3: 4.1.11; DoDI 4715.9: 4	AFI 32-7061; AFI 32-1001, Sec C, 6.4; also AFI 35-101, Public Affairs, fig. 9.3, PA review of EIAP documents	AR 200-2; AR 200-1	SECNAVINST 4000.35A: 5.b	
6	Provide data for use in CERCLA/ERP process	All types of significant cultural resources	EPA CERCLA Compliance with Other Laws Manual, Part II.					
7	Provide data for use in military construction, maintenance and repair, family housing economic analyses, and DD 1391 development	All types of cultural resources			AFI 32-1021, 2.1.7, Figure 2.1, item 7, 4.2.; AFI 32-1032: 5.1.2.3; AFMAN 32-1089: 2.5.1/.4/.6/.8; 3.4.1.2; 4.2.1	AR 200-1	SECNAVINST 4000.35A: 5.b	
8	Provide data for use when dealing with inadvertent discoveries or emergency situations	Archaeological resources; NAGPRA Cultural Items	NAGPRA Sec 3(d); NHPA		AFI 32-7065: 3.9	AR 200-1	OPNAV 5090.1B	
9	Provide data to address requests for access to sacred sites	Sacred Sites	E.O. 13007, Sec 1	DoDI 4710.02: 6.3;	AFI 32-7065: 1.3.4., 4.1.5	AR 200-1		

<b>Table A.1 Cultural Resources Mangement Processes and Citations</b>								
	<b>Process Description</b>	<b>Resource Type</b>	<b>Statutory/Regulatory Citation</b>	<b>DoD Citation</b>	<b>USAF Citation</b>	<b>USA Citation</b>	<b>USN Citation</b>	<b>Marine Corps Citations</b>
10	Provide data to evaluate real property acquisition, disposal, or use proposals	Historic monuments; Historical Real Property; significant scientific prehistoric, historic or archaeological data		DoDI 4715.3(F)(1)(l)	AFI 32-9001: 1.3; AFI 32-9003: 1.8.14, 1.24; AFI 32-9004: 1.7.2 and A2.1.1, A2.1.2, A2.14; AFH 32-9007: 3.17, 3.28.17, 4.5.3, 4.22; Section 4D; Atch 15/ A15.1.1, A15.14; 40 USC 484(k)(3); and AF Form 300, including Item 11 certification	AR 405-80: 4-8, 4-15	SECNAVINST 4000.35A: 5.b	
<b>Management (Planning/ Protection)</b>								
11	Include lists and descriptions of cultural resources in the Integrated Cultural Resource Management Plan (ICRMP)	All types of cultural resources		DoDD 4710; DoDI 4715.3: D.3.c.; 4.3.3.	AFI 32-7065: 4.10	AR 200-1	OPNAV 5090.1B	
12	Develop, coordinate, issue and monitor ARPA permits affecting archaeological resources	Archaeological Resources	32 CFR 229 (deleted 2006; refer to ARPA)		AFI 32-7065: 4.2	AR 200-1; AR 405-80	SECNAVINST 4000.35A: 5.f.; 6.c.10 and f.4; OPNAV 5090.1B	
13	Document and report ARPA violations associated with particular resources	Archaeological Resources	ARPA Sec 14(c)		AFI 32-7065: 4.14.2	AR 200-1		

<b>Table A.1 Cultural Resources Mangement Processes and Citations</b>								
	<b>Process Description</b>	<b>Resource Type</b>	<b>Statutory/Regulatory Citation</b>	<b>DoD Citation</b>	<b>USAF Citation</b>	<b>USA Citation</b>	<b>USN Citation</b>	<b>Marine Corps Citations</b>
14	Provide data to operational community for use in developing and evaluating requests for new or modifications to existing test and training areas	All types of cultural resources; Indian reservations and lands		DoDD 3200.15: 4.2.2	AFI 13-201: 2.6.1.4.7; AFI 13-212, Vol 1: 3.3.2.2.5.			
15	Provide data for consideration in Integrated Natural Resource Management Plan processes	All types of cultural resources		DoDI 4715.3: E.7.1.9.; DoDi 4715.3(F)(1)(b)	AFI 32-7064: 2.3.4; AFI 32-7065: 4.3	AR 200-3: 2-17, 3-3.a., 4-8.j., 8-1.d.; AR 200-1	SECNAVINST 4000.35A: 5.b	
16	Provide data for use in comprehensive or master planning	All types of cultural resources			AFI 32-7062: 2.3.3.-4.; Table A5.1		SECNAVINST 4000.35A: 5.b	
17	Provide data to real property managers for accountability of assets; real property records and forms, property cards	Historic buildings; archeological sites			AFH 32-9007: 5.36, 5.39, 5.42.1.10	AR 405-45: 3-17		
18	Access resource database to evaluate Freedom of Information Act (FOIA) requests; maintain confidentiality of site locations	Important archaeological and traditional resources	NHPA Sec 304; ARPA Sec 4, 6-8, 9	DoD Regulation 5400.7/Air Force Supplement, 24 June 2002, "DoD Freedom of Information Act Program," Section C3.2.1.3	DoD Regulation 5400.7/Air Force Supplement, 24 June 2002, "DoD Freedom of Information Act Program," Section C3.2.1.3		SECNAVINST 4000.35A: 5.g	
19	Provide data for use in installation self assessment processes	All types of cultural resources		DoDI 4715.3: D.1.c.	AFI 32-7045: Atch 3	AR 200-1		
20	Provide data to military museums for coordination on identification of official service historical property and artifacts	Historical properties; artifacts			AFI 84-103: 6-2	AR 870-20		



<b>Table A.1 Cultural Resources Mangement Processes and Citations</b>								
	<b>Process Description</b>	<b>Resource Type</b>	<b>Statutory/Regulatory Citation</b>	<b>DoD Citation</b>	<b>USAF Citation</b>	<b>USA Citation</b>	<b>USN Citation</b>	<b>Marine Corps Citations</b>
21	Maintain collections of artifacts, records and data according to federal standards	Prehistoric and historic artifacts and records	NHPA Sec 101(a)(7)(A), NHPA Sec 112(a)(2), ARPA Sec 5		AFI 32-7065: 1.4.7.8., 1.4.10.9, 4.9	AR 200-1	SECNAVINST 4000.35A: 5.f.	
22	Provide cultural resource data to interface with environmental budgeting process	All types of cultural resources		DoDi4715.3 Programming And Budgeting Priorities For Conservation Programs	AFI 32-7065: 4.8; AFI 32-7001; AF/ILEV memo	AR 200-1	SECNAVINST 4000.35A: 5.b	
23	Provide data for use in public awareness activities in archaeology and other types of cultural resources	All types of cultural resources	ARPA Sec 10(c)	DoDI 4715.3: D.1.i	AFI 32-7065: 1.4.10.7, 3.1.1.6, 4.13			
24	Provide data for use in preparing required status reports on all types of cultural resources and heritage assets	All types of cultural resources	ARPA Sec 5(c); AHPA; E.O. 13287, Sec 3(c); CFOA	DoDI 4165.14; DoDI 4715.3 Conservation Measures of Merit	AFI 32-7065: 4.14.1	AR 200-1	SECNAVINST 4000.35A: 6.h.(7)	
25	Establish measures sufficient to protect known historic, cultural and archaeological resources until appropriate mitigation or preservation can be completed	All types of cultural resources		DoD 4715.05-G, C12.3.5.2.; C12.3.5.3.				
26	Establish measures to prevent DoD personnel from disturbing or removing historic or cultural resources without permission of the host nation	All types of cultural resources		DoD 4715.05-G, C12.3.6.				

<b>Processes 1 and 3: Identify all types of cultural resources and evaluate them for National Register eligibility</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Compile existing information	Base BHPO	Sites and surveys on file (SHPO files, comparable host nation files, world heritage list, installation or command inventories)	
2	Develop an archaeological predictive model, identify areas that merit survey	Base BHPO	Study of past survey and results, areas of disturbance, slope, surface water	
3	Develop a plan for inventory of historic structures	BHPO Historic Structure Program Manager and Real Property	Real property list	
4	Develop a plan and program funds to conduct inventories	Base program managers	Inventoried properties and data from previous steps	Plan is dependent on priority and available funds
5	Identify all types of cultural resources within Area of Responsibility	CRM/District Archaeologist	Site locations/boundaries, etc	
6	Evaluate all cultural resources within project areas	CRM/District Archaeologist	Site locations/boundaries	
7	Conduct any needed consultation	Installation CRM/SHPO	Letter to SHPO, reports; letter from SHPO (or host nation equivalent)	Update GIS on property status
8	Identify all areas surveyed	CRM/District Archaeologist	Survey boundaries, when completed, methods used	
9	Maintain a list of inventoried properties and the status of each property	Base level data entry and GIS personnel	List of properties, reports, forms, correspondence etc	
10	Maintain an artifact inventory list	Base level curation	Artifacts list from reports	

<b>Process 2: Develop inventory of human remains and associated funerary objects; develop summary of unassociated funerary objects, sacred objects and cultural patrimony</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Identify all collections, including general content, for which installation has stewardship responsibility		ICRMP, existing inventories	
2	Determine location for all collections--records and artifacts		ICRMP, existing inventories	
	<u>Section 6 Process</u>			
3	Prepare Section 6 Summary letter			
4	Send Section 6 Summary Letter to potentially affiliated federally recognized tribes (copy to NPS).		List of affiliated federally recognized tribes	
5	Consult with federally recognized tribes and identify unassociated funerary objects, sacred objects, and objects of cultural patrimony			
6	Determine cultural affiliation of unassociated funerary objects, sacred objects, and objects of cultural patrimony.		Data on cultural affiliation of unassociated funerary objects, sacred objects, and objects of cultural patrimony.	
7	Prepare Notice of Intent to Repatriate unassociated funerary objects, sacred objects, and objects of cultural patrimony.			
8	Publish Notice of Intent to Repatriate in Federal Register.			
9	Repatriate NAGPRA Section 6 culturally affiliated materials to relevant federally recognized tribes.			
	<u>Section 5 Process</u>			

<b>Process 2: Develop inventory of human remains and associated funerary objects; develop summary of unassociated funerary objects, sacred objects and cultural patrimony</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
10	Determine which collections may contain human remains or funerary objects.		ICRMP, existing inventories	
11	Conduct physical inventory of human remains and associated funerary objects.			
12	Prepare draft Section 5 Inventory.			
13	Submit draft Section 5 Inventory to potentially affiliated federally recognized Native American tribes, Alaskan Natives, or Native Hawaiians.		List of affiliated federally recognized tribes	
14	Conduct consultation with federally recognized tribes, Alaskan Natives, or Native Hawaiians.			
15	Determine which human remains and funerary objects are culturally affiliated with a federally recognized tribe.		Data on Cultural Affiliations	
16	Submit Notice of Inventory Completion and Item by Item list of culturally affiliated items to federally recognized tribes and NPS.			
17	Publish Notice of Inventory Completion in Federal Register			
18	Repatriate NAGPRA Section 5 culturally affiliated materials to relevant federally recognized tribes.			
19	Determine which human remains and associated funerary objects are culturally unidentifiable.		Data on Cultural Affiliations	
20	Prepare an Item by Item list (inventory) of culturally unidentifiable human remains and associated funerary objects.		Human Remains Inventory	
21	Provide copy of Inventory of culturally unidentifiable human remains and associated funerary objects to NPS.			

<b>Process 2: Develop inventory of human remains and associated funerary objects; develop summary of unassociated funerary objects, sacred objects and cultural patrimony</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
22	NPS provides Inventory of culturally unidentifiable human remains and associated funerary objects to NAGPRA Review Committee.			
23	Retain custody of culturally unidentifiable materials until final regulations are published.			

<b>Process 4: Avoid, minimize, or mitigate adverse effects (Section 106 Review)</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Determine if APE has been surveyed	Installation	Archaeology Survey Areas, Evaluated Buildings	If APE is unsurveyed, steps for Process 1 apply
2	Does the APE merit survey	Installation	Site Locations, Probability Zones, Disturbed Areas, Surface Water, Slope, Building Construction dates and uses	If APE is unsurveyed, steps for Process 1 apply
3	Devise Survey Strategy	Installation	State (or other applicable) Standards	
4	Evaluate Sites	Installation	Site data, relevant evaluation standards, historic contexts	
5	Assess Effects	Installation	Details of proposed undertaking, contributing features, elements	
6	Propose Mitigation	Installation	past MOAs, MOUs, PAs	

<b>Processes 5 and 6: Provide data for use in the NEPA and CERCLA/ERP processes</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Determine APE	NEPA Staff, Project Managers	APE-Shapefile, CAD Drawing, Hardcopy Map	
2	Maintain a list of cultural resources	CRM	Surveys, Sites, Districts, Cemeteries, Structures	
3	Develop an archaeological predictive model	CRM	High probability areas (HPA's) not surveyed.	
4	Maintain a list of base structures with dates of construction	Real Property	Real Property list that is spatial and shows dates of construction	
5	Identify areas of potential impact	CRM and EIAP Committee	Input from customers requesting an undertaking within a given area of the base	
6	Determine if significant CR are in APE	CRM	Installation Survey Reports, Site Forms, Shapefile of Sites and survey areas	
7	Review for Relevant Agreement Documents	CRM	Nation Wide Program Comments/Agreements, Installation level MOA's and PA's	

<b>Processes 5 and 6: Provide data for use in the NEPA and CERCLA/ERP processes</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
8	Report to NEPA staff on possibility of impact and/or extent of possible impact to CR within APE	CRM		

<b>Process 7: Provide data for use in military construction, maintenance and repair, family housing economic analyses, and DD 1391 development</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Provide historic properties data for economic analysis	CRM	Evaluated buildings data	
1	Assess Potential for Impacts on proposed new construction, renovations	CRM	DOPA	
2	Determine if APE has been surveyed	CRM	Archaeology Survey Areas, Building Evaluations	
3	Does the APE have known historic properties or potential for unrecorded historic properties?	CRM	Site Locations, Probability Zones, Disturbed Areas, Surface Water, Slope, Building Construction dates and uses	
4	Conduct evaluations/surveys as needed	CRM		
5	Assess Effects		Proposed project details	See process 4

<b>Process 8: Provide data for use when dealing with inadvertent discoveries or emergency situations</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Secure Site	CR Staff, Range Control, Security Personnel		
2	Determine site significance and if human remains are present	Professional archaeologist, CR Staff	Installation survey reports, site data	
3	Consult with SHPO and/ or Tribes	CR Staff	List of affiliated SHPO and Tribes	
4	Change project SOW, Relocate project, or mitigate site	Professional archaeologist, CR Staff, DPW, Project Managers		

<b>Process 9: Provide data to address requests for access to sacred sites</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Process request for site visits	Base Public Affairs	Installation contacts for routing request	
2	Maintain a list of sacred sites	CRM	Archaeological sites and districts	
3	Review Request for legitimacy	CRM	Comprehensive Agreements, list of associated federally recognized tribes	
4	Compare area of request with restricted areas	Security Forces, Range Operations	Area, route of request; restricted areas	
5	Grant Request as appropriate	Base Public Affairs	Approval of CRM, Security forces, etc.	



<b>Process 10: Provide data to evaluate real property acquisition, disposal, or use proposals</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Determine APE	NEPA Staff, Project Managers	APE-Shapefile, CAD Drawing, Hardcopy Map	
1	Maintain a list of cultural resources	CRM	Surveys, Sites, Districts, Cemeteries, Structures	
2	Develop an archaeological predictive model	CRM	High probability areas (HPA's) not surveyed.	
3	Maintain a list of base structures with dates of construction	Real Property	Real Property list that is spatial and shows dates of construction	
4	Identify areas of potential impact	CRM and EIAP Committee	Input from customers requesting to impact a given area of the base	
2	Determine if significant CR are in APE	CRM	Installation Survey Reports, Site Forms, Shapefile of Sites and survey areas	
3	Review for Relevant Agreement Documents	CRM	Nation Wide Program Comments/Agreements, Installation level MOA's and PA's	
4	Consider compatible reuse of buildings	CRM	contributing architectural elements, potential reuses	

<b>Process 11: Include lists and descriptions of cultural resources in the Integrated Cultural Resource Management Plan (ICRMP)</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Include relevant data in ICRMP		Eligible Resources	
			Unevaluated Resources	
			Threatened Resources	
			Past Surveys	
			Current Agreements	
			Planned Undertakings	
			Consulting Party contacts	
			Interested Party contacts	
			Associated Tribes	
			Architecturally Significant features of eligible buildings	

<b>Process 12: Develop, coordinate, issue and monitor ARPA permits affecting archaeological resources</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Determine whether permit request is legitimate	CRM	Permit Application	
2	Query DB for Previous Studies/ Violations/ Management Concerns	CRM, security forces, range management	Known Resources, Study areas, past violations, management concerns, restricted areas	

<b>Process 12: Develop, coordinate, issue and monitor ARPA permits affecting archaeological resources</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
3	Query DB for Affiliated Tribes, other Agencies		Lists of consulting parties, existing MOAs, PAs, CAs	
4	Consult with Tribes (as needed)			
5	Incorporate identified concerns in Agreement			

<b>Process 13: Document and report ARPA violations associated with particular resources</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Monitor historic properties	BHPO	Sites, Cemeteries	
2	Document ARPA violations	CRM and Security Police	Violation details	The security police are notified. A report is created with available details. Looting report is created. All documents are then filed with the Annual Report to Congress as an attachment to the report.
3	Continue to monitor the property for continued violations	CRM and Security Police	Observations	Drive by inspections may catch violators and/or make certain further damage is not created. Hidden cameras may also be useful in areas of known violations.

<b>Process 14: Provide data to operational community for use in developing and evaluating requests for new or modifications to existing test and training areas</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Create a GIS feature for areas of cultural concern	Base level data entry and GIS personnel	Survey Areas, Areas of Cultural Concern feature (buffered archaeological sites), Areas of Archaeological Potential, Areas of Native American Concern	
2	Compare Proposed training areas with cultural areas of concern (sacred sites, shallow sites, unevaluated sites, unsurveyed areas)		Above, plus proposed training areas, depth of training impact in soil	
3	Evaluate potential effects, site vulnerability		soil attributes (soil strength, erosion potential), site depth, size, density, artifact types	Evaluate whether identified sites are vulnerable to proposed training activities. Deeply buried sites may be below potential depth of ruts or soil compaction. Alternatively, certain site types may not be as vulnerable to training impacts.
4	Educate the base on the available feature	Base GIO	Areas of Cultural Concern feature and metadata	

<b>Processes 15 and 16: Provide data for consideration in Integrated Natural Resource Management Plan and Master Plan processes</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Create a GIS feature for areas of cultural concern	Base level data entry and GIS personnel	Survey Areas, Areas of Cultural Concern feature (buffered archaeological sites), Areas of Archaeological Potential, Areas of Native American Concern	
2	Provide areas of concern polygons to planners who need them.	CRM	Areas of Cultural Concern	Unbuffered archaeological site location may be too much information, and may jeopardize site security.
3	Evaluate applicable Management areas (e.g. Forestry areas) for cultural resources concerns	CRM	Survey Areas, Areas of Cultural Concern feature (buffered archaeological sites)	

<b>Process 17: Provide data to real property managers for accountability of assets; real property records and forms, property cards</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Review current eligibility codes for buildings/structures in RP database	CRM	RP database	
2	Compile data on historic buildings/structures	CRM	All inventoried buildings and structures with NRHP eligibility code matched to DoD eligibility code, date of determination,	

<b>Process 17: Provide data to real property managers for accountability of assets; real property records and forms, property cards</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
			levels of concurrence	
3	Provide data to real property managers for accountability of assets; real property records and forms, property cards	CRM	List of facility numbers with updated DoD NRHP eligibility code	

<b>Process 18: Access resource database to evaluate Freedom of Information Act (FOIA) requests; maintain confidentiality of site locations</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Maintain list/database of cultural resources	CRM	Historic properties (sites, buildings, districts, objects, etc.); sacred sites, TCPs.	
2	Compare FOIA request with list of CRs, determine whether any requested data relates to the location of archaeological sites, sacred sites, or Native American burials	CRM		Archaeological site locations are exempt from FOIA. Archaeological site location information may be provided to professional archaeologists
3	Provide requested data not exempt from FOIA.	CRM		Some information on archaeological site attributes other than location may be releasable.

<b>Process 19: Provide data for use in installation self assessment processes</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Review and answer Standard Checklist Questions pertaining to cultural resource management at installation or command.	Installation or Command Cultural Resource Manager (may be collateral duty, depending on size of facility and related assets.	Architectural and Archeological Surveys, Integrated Cultural Resource Management Plan and Programmatic Agreement.	
2	Correct Deficiencies	Installation or Command Cultural Resource Manager and or Senior Management	Report of Deficiencies	

<b>Process 20: Provide data to military museums for coordination on identification of official service historical property and artifacts</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Review existing inventory	Installation or Command	Inventory of Heritage Assets	An example of a Heritage Asset may be: A movable bronze Bird Bath, that has been a lawn ornament of the Commanding Officer's Quarters, that was a gift to the Command years ago by a visiting dignitary, or the local community, or manufactured by base personnel, but is not actually part of the Quarters, and may not be listed in a Landscape Survey.

<b>Process 20: Provide data to military museums for coordination on identification of official service historical property and artifacts</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
2	Inventory items if existing inventory is incomplete	Installation or Command		
3	Report to Chain of Command and identify appropriate installation point of contact responsible for item(s)	Installation or Command	Updated HA inventory	

<b>Process 21: Maintain collections of artifacts, records and data according to federal standards</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Identify all collections, including general content, for which installation has stewardship responsibility	CRM	ICRMP, List of Inventories, Copy of Inventories	
2	Determine locations for and condition of all collections--records and artifacts	CRM		
3	Determine/decide how collections will be curated long term. Some of the questions to answer are:	CRM		
3a	a. Where (e.g., state, region) will the collections be curated?	CRM		
3b	b. Are there museums/institutions in the state or region that meet 36 CFR Part 79 standards?	CRM	List of Curation Facilities	
3c	c. How many museums/institutions will curate the collections?	CRM		



<b>Process 21: Maintain collections of artifacts, records and data according to federal standards</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
3d	d. How will curation services be acquired (in most instances this will be through a contract)?	CRM		
4	Acquire curation services (for 5 years) according to standards outlined in 36 CFR Part 79	CRM		
5	Move collections, if necessary	CRM		
6	Annually inspect curation facility	CRM	Curation MOA	
7	Return to Step 4.			

<b>Process 22: Provide cultural resource data to interface with environmental budgeting process</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Compare list of planned undertakings with areas where additional CR studies are needed	CRM	Eligible, unevaluated properties, unsurveyed areas.	Should be identified in ICRMP
2	Input requirements into the Air Force EQ Database	CRM	EQ Database	

<b>Process 23: Provide data for use in public awareness activities in archaeology and other types of cultural resources</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Maintain a list of all cultural resources	CRM	Historic Properties	Specific data requests are processed based upon each public awareness event. Site locations are not disclosed.

<b>Process 23: Provide data for use in public awareness activities in archaeology and other types of cultural resources</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
2	Compare list of historic properties available for interpretation or visits with restricted areas	CRM	Restricted Areas	Some historic properties (Native American Grave sites) may not be appropriate for visits. Others may fall within restricted areas of an installation
3	Create a display with appropriate data for the event	CRM		The theme of the event drives the types of data to be presented

<b>Process 24: Provide data for use in preparing required status reports on all types of cultural resources and heritage assets</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Incorporate requirement to inventory and list items as Heritage Assets, Cultural resources or artifacts in Architectural Survey or Integrated Cultural Resources Management Plan appendices.	Individual Installation or Command	Existing Inventories, ICRMP	
2	Perform annual inventory/Condition Assessment	Individual Installation or Command		
3	Report up Chain of Command.	Individual Installation or Command	Survey Reports, Revised Inventories, ICRMP	
4	Update changes in ICRMP.	Individual Installation or Command		

<b>Process 25: Establish measures sufficient to protect known historic, cultural and archaeological resources until appropriate mitigation or preservation can be completed</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Establish policy directing adherence to program.	DOD		
1a	Establish general training materials to ensure that the objectives of the program are translated in the form of training applications to DOD employees.	DOD Cultural Resources Personnel		
1b	Conduct periodic training of installation personnel on policy. Post policy and training materials to website so visitors can be made aware of program.	All personnel on post		
2	Establish installation regulations prohibiting activities that damage or remove resources.	Installation	Examples of regulations that have been implemented by other installations.	
3	Prepare plan outlining the recovery and protection of the property in question.	Installation Cultural Resource Personnel		
4a	Implement Recovery Plan.	Installation Cultural Resource Personnel		
4b	Implement Protection Practices such as posting warning signs and establishing cultural resource Hot Line to report vandalism or theft.	MPs, Installation Security personnel, Cultural Resources personnel	Examples of methods that have worked to protect Cultural Resources at other installations.	
4c	Take action against those who violate this policy as a deterrent to others.	Commanders, Military Judges etc.		
5	Evaluate and adjust to improve program. [This box applies to all areas.]	All		

<b>Process 26: Establish measures to prevent DoD personnel from disturbing or removing historic or cultural resources without permission of the host nation</b>				
<b>Step #</b>	<b>Step Description</b>	<b>Responsible Party</b>	<b>Data Needed</b>	<b>Misc Comments</b>
1	Establish policy directing adherence to program.	DOD		
2	Establish general training materials to ensure that the objectives of the program are translated in the form of training applications to DOD employees.	DOD Cultural Resources Personnel		
3	Establish specific training materials for each area where DOD employees are to be deployed.	DOD Cultural Resources Personnel		
4	Conduct and document general training on a periodic basis per policy.	All potentially deploying personnel.	Training materials.	
5	Conduct and document specific training for area of deployment.	All personnel who have been notified or pending deployment.	Training materials.	
6	Evaluate and adjust to improve program. [This box applies to all areas.]	All		

## **Appendix B**

### **Recommended Cultural Resources Spatial Data Entities and Attributes**



## Table Report

<b>Table Name</b>	<b>Table Type</b>	<b># Columns</b>
Archaeological_Sites	Independent	3
Area_of_prior_tribal_use_or_occupation	Independent	3
Cemeteries_Burial_Sites	Independent	2
Cleared_Areas	Independent	1
Cultural_Resources	Independent	17
Districts	Independent	1
Historic_Landscapes	Independent	1
Inventoried_Buildings_Structures	Dependent	5
Management_Areas	Independent	6
Objects	Independent	1
Probability_Areas_Areas_of_Concern	Independent	0
Resource-Management_Areas	Dependent	0
Resource-Studies	Dependent	0
Restricted_Areas	Independent	1
Sacred_Sites	Independent	1
Survey_Study_Areas	Independent	4
Survey-Management_Areas	Dependent	0
Traditional_Cultural_Resources	Independent	1

### Table 'Archaeological\_Sites'

<b>Table Name</b>	Archaeological_Sites
<b>Primary Key</b>	pk_Archaeological_Sites

#### Columns

Key	Column Name	Comments
	Depth	
	ARPA_Violation	
	RP_Parcel_Number	

#### Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship1	Informative	Cultural_Resources	Archaeological_Sites	1:N

### Table 'Area\_of\_prior\_tribal\_use\_or\_occupation'

<b>Table Name</b>	Area_of_prior_tribal_use_or_occupation
<b>Primary Key</b>	pk_Area_of_prior_tribal_use_or_occupation

#### Columns

Key	Column Name	Comments
	Cultural_Affiliation	
	Affiliation_Dates	
	Data_Source	Source of information for the affiliation cited.

#### Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship22	Informative	Management_Areas	Area_of_prior_tribal_use_or_occupation	1:N

### Table 'Cemeteries\_Burial\_Sites'

<b>Table Name</b>	Cemeteries_Burial_Sites
<b>Primary Key</b>	pk_Cemeteries_Burial_Sites

#### Columns

Key	Column Name	Comments
	Marked_Unmarked	
	extant_exhumed	



## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship5	Informative	Cultural_Resources	Cemeteries_Burial_Sites	1:N

## Comments

Unclear if this should be required or simply recommended.

## Table 'Cleared\_Areas'

<b>Table Name</b>	Cleared_Areas
<b>Primary Key</b>	pk_Cleared_Areas

## Columns

Key	Column Name	Comments
	Reason	Grounds for clearance (disturbed, slope, underwater, etc.).

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship15	Informative	Management_Areas	Cleared_Areas	1:N

## Comments

This is conceptually the mirror of restricted areas. An installation can use either to retain information on parts of the installation that either require further CR investigations, or those that do not.

## Table 'Cultural\_Resources'

<b>Table Name</b>	Cultural_Resources
<b>Primary Key</b>	pk_Cultural_Resources

## Columns

Key	Column Name	Comments
	Resource_Name	
	State_Resource_Number	
	NRHP_Status	
	NRHP_Status_Date	
	NRHP_Significance_Type	
	Significance_Period	
	Document_Link	
	Recordation_Date	
	Cultural_Association	
	Description	
	Boundary_Method	Not discussed by working group. May be part of metadata instead of attributes. Probably intrinsically clear for buildings/structures. But needs to be explicit for archaeological sites, cemeteries, sacred sites, landscapes, etc.
	Installation_Code	
	Resource_Type	Object, archaeological site, district, landscape, burial site, sacred site, building, or traditional cultural resource
	Other_Names	
	Security_Sensitivity	Is information about the site potentially sensitive (e.g. as for archaeological sites, burial sites, sacred sites).
	Boundary_Confidence	How clearly defined is the boundary. Some resources (e.g. sacred sites) may not have clearly defined boundaries.
	Resource_Parcel_ID	Link to a table matching cultural resources ids with real property parcel ids. The relationship between cultural resources and parcels will be N:N, and it will be necessary in a db design to break those into 1:N relationships.

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship1	Informative	Cultural_Resources	Archaeological_Sites	1:N
Relationship2	Informative	Cultural_Resources	Inventoried_Buildings_S tructures	1:N
Relationship3	Informative	Cultural_Resources	Districts	1:N
Relationship4	Informative	Cultural_Resources	Objects	1:N
Relationship5	Informative	Cultural_Resources	Cemeteries_Burial_Sites	1:N
Relationship6	Informative	Cultural_Resources	Historic_Landscapes	1:N
Relationship7	Informative	Cultural_Resources	Traditional_Cultural_Re sources	1:N
Relationship8	Informative	Cultural_Resources	Sacred_Sites	1:N
Relationship9	Identifying	Cultural_Resources	Resource-Studies	1:N
Relationship18	Identifying	Cultural_Resources	Resource- Management_Areas	1:N

**Table 'Districts'**

<b>Table Name</b>	Districts
<b>Primary Key</b>	pk_Districts

**Columns**

Key	Column Name	Comments
	User_Defined_Field	Installation-specific requirements

**Relationships**

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship3	Informative	Cultural_Resources	Districts	1:N
Relationship25	Identifying	Districts	Inventoried_Buildings_S tructures	1:N

**Table 'Historic\_Landscapes'**

<b>Table Name</b>	Historic_Landscapes
<b>Primary Key</b>	pk_Historic_Landscapes

**Columns**

Key	Column Name	Comments
	User_Defined_Field	Place for installation-specific requirements

**Relationships**

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship6	Informative	Cultural_Resources	Historic_Landscapes	1:N

**Table 'Inventoried\_Buildings\_Structures'**

<b>Table Name</b>	Inventoried_Buildings_Structures
<b>Primary Key</b>	pk_Inventoried_Buildings_Structures

**Columns**

Key	Column Name	Comments
	Facility_Number	
	Original_Use	
	Current_Use	
	District_ID	As needed to show contributing/non contributing buildings to a district
	Contributing_Status	Whether building/structure contributes to an associated historic district.

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship2	Informative	Cultural_Resources	Inventoried_Buildings_S tructures	1:N
Relationship25	Identifying	Districts	Inventoried_Buildings_S tructures	1:N

## Table 'Management\_Areas'

<b>Table Name</b>	Management_Areas
<b>Primary Key</b>	pk_Management_Areas

## Columns

Key	Column Name	Comments
	Installation_Code	
	RP_Parcel	This may need to be a link to another table. One record in this table may relate to many parcels
	Description	
	Date	
	Depth	
	Document_Link	

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship15	Informative	Management_Areas	Cleared_Areas	1:N
Relationship16	Informative	Management_Areas	Probability_Areas_Areas_of_Concern	1:N
Relationship17	Informative	Management_Areas	Restricted_Areas	1:N
Relationship19	Identifying	Management_Areas	Resource-Management_Areas	1:N
Relationship21	Identifying	Management_Areas	Survey-Management_Areas	1:N
Relationship22	Informative	Management_Areas	Area_of_prior_tribal_use_or_occupation	1:N

## Table 'Objects'

<b>Table Name</b>	Objects
<b>Primary Key</b>	pk_Objects

## Columns

Key	Column Name	Comments
	Ownership	

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship4	Informative	Cultural_Resources	Objects	1:N

## Table 'Probability\_Areas\_Areas\_of\_Concern'

<b>Table Name</b>	Probability_Areas_Areas_of_Concern
<b>Primary Key</b>	pk_Probability_Areas_Areas_of_Concern

## Columns

Key	Column Name	Comments
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## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship16	Informative	Management_Areas	Probability_Areas_Areas_of_Concern	1:N

## Comments

These would be estimates of archaeological potential on an installation.

## Table 'Resource-Management\_Areas'

<b>Table Name</b>	Resource-Management_Areas
<b>Primary Key</b>	pk_Resource-Management_Areas

## Columns

Key	Column Name	Comments
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## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship18	Identifying	Cultural_Resources	Resource-Management_Areas	1:N
Relationship19	Identifying	Management_Areas	Resource-Management_Areas	1:N

## Table 'Resource-Studies'

<b>Table Name</b>	Resource-Studies
<b>Primary Key</b>	pk_Resource-Studies

## Columns

Key	Column Name	Comments
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## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship9	Identifying	Cultural_Resources	Resource-Studies	1:N
Relationship10	Identifying	Survey_Study_Areas	Resource-Studies	1:N

## Table 'Restricted\_Areas'

<b>Table Name</b>	Restricted_Areas
<b>Primary Key</b>	pk_Restricted_Areas

## Columns

Key	Column Name	Comments
	Restriction_Dates	

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship17	Informative	Management_Areas	Restricted_Areas	1:N

## Comments

This is conceptually the mirror of cleared areas. An installation can use either to retain information on parts of the installation that either require further CR investigations, or those that do not.

## Table 'Sacred\_Sites'

<b>Table Name</b>	Sacred_Sites
<b>Primary Key</b>	pk_Sacred_Sites

## Columns

Key	Column Name	Comments
	Depth	

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship8	Informative	Cultural_Resources	Sacred_Sites	1:N

## Table 'Survey\_Study\_Areas'

<b>Table Name</b>	Survey_Study_Areas
<b>Primary Key</b>	pk_Survey_Study_Areas

## Columns

Key	Column Name	Comments
	Installation_Code	
	Begin_Date	
	End_Date	
	Survey_Parcel_ID	

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship10	Identifying	Survey_Study_Areas	Resource-Studies	1:N
Relationship20	Identifying	Survey_Study_Areas	Survey-Management_Areas	1:N

## Table 'Survey-Management\_Areas'

<b>Table Name</b>	Survey-Management_Areas
<b>Primary Key</b>	pk_Survey-Management_Areas

## Columns

Key	Column Name	Comments
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## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship20	Identifying	Survey_Study_Areas	Survey-Management_Areas	1:N
Relationship21	Identifying	Management_Areas	Survey-Management_Areas	1:N

## Table 'Traditional\_Cultural\_Resources'

<b>Table Name</b>	Traditional_Cultural_Resources
<b>Primary Key</b>	pk_Traditional_Cultural_Resources

## Columns

Key	Column Name	Comments
	User_Defined_Field	Installation-specific requirements

## Relationships

Constraint Name	Relationship Type	Parent Table	Child Table	Card.
Relationship7	Informative	Cultural_Resources	Traditional_Cultural_Resources	1:N

## Relationship Report

Parent Table	Relationship Type	Child Table	Card.
Cultural_Resources	Informative	Archaeological_Sites	1:N
Survey_Study_Areas	Identifying	Resource-Studies	1:N
Management_Areas	Informative	Cleared_Areas	1:N
Management_Areas	Informative	Probability_Areas_Areas_of_Concern	1:N
Management_Areas	Informative	Restricted_Areas	1:N
Cultural_Resources	Identifying	Resource-Management_Areas	1:N
Management_Areas	Identifying	Resource-Management_Areas	1:N
Cultural_Resources	Informative	Inventoried_Buildings_Structures	1:N
Survey_Study_Areas	Identifying	Survey-Management_Areas	1:N
Management_Areas	Identifying	Survey-Management_Areas	1:N
Management_Areas	Informative	Area_of_prior_tribal_use_or_occupation	1:N
Districts	Identifying	Inventoried_Buildings_Structures	1:N
Cultural_Resources	Informative	Districts	1:N
Cultural_Resources	Informative	Objects	1:N
Cultural_Resources	Informative	Cemeteries_Burial_Sites	1:N
Cultural_Resources	Informative	Historic_Landscapes	1:N
Cultural_Resources	Informative	Traditional_Cultural_Resources	1:N
Cultural_Resources	Informative	Sacred_Sites	1:N
Cultural_Resources	Identifying	Resource-Studies	1:N