

Final

**INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN
FOR
WALLOPS FLIGHT FACILITY**

**Prepared for
National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia**



August 2015

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Executive Summary

The National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF) is an approximately 6,200-acre facility located in Accomack County on the Eastern Shore of Virginia. NASA's Goddard Space Flight Center owns and operates the facility. WFF is responsible for the care of historic properties located within its boundaries. Federal laws and regulations, principally Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended, specify those cultural resources responsibilities. The NHPA requires all Federal agencies to identify, inventory, evaluate, and protect properties listed, or eligible for listing, in the National Register of Historic Places. In addition, NASA regulations require each NASA Center and Component Facility to manage its cultural resources in compliance with cultural resources statutes, executive orders, presidential memoranda, regulations, and other requirements.

This Integrated Cultural Resources Management Plan (ICRMP) is an internal management and compliance plan designed to assist WFF in meeting its obligations under Sections 106 and 110 of the NHPA. The ICRMP outlines how WFF will manage its cultural resources as an integral part of the existing framework of its operations and mission. It is designed to provide a program that will facilitate cultural resources coordination, planning, and compliance activities. The WFF ICRMP provides procedures and recommendations for cultural resources management that are specific to WFF. It identifies current administrative, operations, planning, and maintenance decision-making processes that may affect cultural resources at WFF. It recommends strategies for maintaining those resources and complying with Federal, State, and NASA regulations. The ICRMP is intended to be a dynamic tool that is reviewed and updated as conditions, goals, and objectives change over time.

WFF's current operations and resources profile indicate the following recommended actions:

- Complete a re-evaluation of the efficacy of the 2003 archaeological predictive model.
- Undertake preconstruction archaeological review in a timely fashion for WFF ground-disturbing operations, paying special attention to areas not yet subject to archaeological survey. Conduct each review according to the terms of the Programmatic Agreement (PA) among NASA, the Virginia State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) regarding the management of facilities, infrastructure, and sites at WFF. Depending on review findings, this process could lead to identification and evaluation of archaeological resources, and mitigation measures for significant resources.
- Develop a management plan for the Military Earthworks (44AC0089).
- Identify and evaluate the National Register eligibility of WFF architectural resources that reach the 45 years of age or older and architectural resources less than 50 years old that may have exceptional significance.
- Re-evaluate the National Register eligibility of architectural resources that were previously evaluated prior to their turning 50 years of age to address the passage of time, changing perceptions of significance, subsequent changes to the property, or incomplete prior evaluations.

- Undertake an alternatives analysis to evaluate the future preservation, use, or disposition of the National Register-eligible Wallops Beach Life Saving Station (VDHR #001-0027-0100) and associated Observation Tower (VDHR #001-0027-0101) in accordance with the terms of the PA among NASA, the Virginia SHPO, and the ACHP.

These requirements along with WFF current standard operating procedures address NHPA requirements for WFF.

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation	NASA	National Aeronautics and Space Administration
AD	Anno Domini	NEPA	National Environmental Policy Act
AIRFA	American Indian Religious Freedom Act	NHPA	National Historic Preservation Act
AMSL	above mean sea level	NOAA	National Oceanic and Atmospheric Administration
APE	Area of Potential Effects	NPD(s)	NASA Policy Directive(s)
ARPA	Archaeological Resources Protection Act	NPR(s)	NASA Procedural Requirement(s)
BC	Before Christ	NPS	National Park Service
ca.	circa	PA	Programmatic Agreement
CFR	Code of Federal Regulations	R&D	Research and Development
EA	Environmental Assessment	SCS	Soil Conservation Service
EIS	Environmental Impact Statement	SHPO	State Historic Preservation Office/Officer
EO	Executive Order	TIROS	Television Infra-Red Observation Satellite
FPO	Federal Preservation Officer	U.S.	United States
GIS	Geographic Information System	U.S.C.	United States Code
GSA	General Services Administration	USDA	U.S. Department of Agriculture
HPO(s)	Historic Preservation Officer(s)	USDI	U.S. Department of the Interior
ICRMP	Integrated Cultural Resources Management Plan	VDHR	Virginia Department of Historic Resources
MLCC	Mission Launch Command Center	WEMA	Wallops Employee Morale Association
MOA	Memorandum of Agreement	WFF	Wallops Flight Facility
NACA	National Advisory Committee on Aeronautics		
NAGPRA	Native American Graves Protection and Repatriation Act		

1.0 INTRODUCTION

1.1 NATIONAL HISTORIC PRESERVATION PROGRAM

Historic properties in the United States (U.S.) are identified and protected by Federal laws enacted by Congress. The principal Federal regulatory tool governing historic properties is the National Historic Preservation Act of 1966, as amended, 54 United States Code (U.S.C.) § 300101 et seq. (NHPA). This Act established a national historic preservation program to provide for the identification and protection of historic properties. The NHPA also established the National Register of Historic Places (National Register), which is a listing of buildings, structures, districts, sites, and objects of significance in American history, architecture, archaeology, engineering, and culture.

Section 106 of the NHPA and its implementing regulations, Protection of Historic Properties, 36 Code of Federal Regulations (CFR) Part 800, require Federal agencies to consider the effects of their undertakings on historic properties. An undertaking is defined as any project, activity, or program under the direct or indirect jurisdiction of a Federal agency, or licensed, permitted, or assisted by a Federal agency that may result in changes to the character or use of a historic property. The agency must then consult with various concerned parties and consider ways to avoid, minimize, or mitigate adverse effects to historic properties. Historic properties include historic or prehistoric buildings, sites, objects, structures, and historic districts listed or eligible for listing in the National Register. All Federal agencies planning a project must identify potential historic properties and evaluate them for their eligibility for listing in the National Register.

Sections 110 and 111 of the NHPA prescribe additional Federal agency responsibilities, including the ongoing identification, management, maintenance, and use of historic properties. An agency may already have an inventory of historic properties under their control compiled during survey work conducted in accordance with Section 110 of the NHPA.

1.2 NASA HISTORIC PRESERVATION PROGRAM

The National Aeronautics and Space Administration (NASA) maintains an Environmental Management Division that is responsible for developing and disseminating “policies for environmental planning, compliance, restoration, pollution prevention, energy and water conservation; as well as natural, cultural, and historic resource preservation” (NASA 2014). The Environmental Management Division is a unit of the Office of Infrastructure and Management, which reports to the Office of the Assistant Administrator for Institutional and Corporate Management.

Conservation of cultural resources is an important component of NASA’s environmental management program. The Environmental Management Division includes NASA’s Federal Preservation Officer (FPO), who works closely with NASA Center and Facility Historic Preservation Officers (HPOs), the NASA Tribal Government Consultation Officer, the NASA Senior Policy Official, and NASA program officers. The FPO also serves as a liaison to the Advisory Council on Historic Preservation (ACHP), the National Park Service, other Federal and State agencies and organizations, and Tribal Preservation Officers. The NASA FPO is based at NASA Headquarters in Washington, DC.

1.3 WALLOPS FLIGHT FACILITY CULTURAL RESOURCES MANAGEMENT PROGRAM

The Facilities Management Branch, under the Management Operations Directorate, manages the cultural resources program at the Wallops Flight Facility (WFF). While WFF's HPO leads the program, the HPO regularly collaborates with the Environmental Office in the program's implementation. The Environmental Office and the Facilities Management Branch will use this Integrated Cultural Resources Management Plan (ICRMP) to protect and manage the cultural resources at WFF.

The NASA Procedural Requirements (NPR) 8510.1, included as **Appendix A**, establish requirements, roles, and responsibilities for management and protection of cultural resources at NASA facilities, including WFF. This NPR is applicable to all NASA personnel, facilities, and activities, including tenants, contractors, grantees, licensees, and other parties operating under the auspices of WFF. It is critical that WFF use the ICRMP in an ongoing and coordinated manner to ensure that both short- and long-term facility planning activities take into account cultural resources protection.

1.4 ORGANIZATION OF WFF'S ICRMP

WFF is responsible for the stewardship of the cultural and historical resources located within its boundaries. This ICRMP provides the necessary information to WFF staff to ensure compliance with cultural resources management laws and policies. This ICRMP is designed to:

- Update the existing 2006 WFF ICRMP;
- Provide WFF-specific procedures and recommendations for cultural resources management;
- Integrate Federal cultural resources laws and regulations and NASA-specific procedures into the existing framework of WFF's operations and mission; and
- Enhance the existing cultural resources program to more effectively facilitate project planning, coordination, design, and compliance activities.

WFF's ICRMP is organized into six sections. Section 1.0 presents an overview of historic preservation programs relevant to WFF and describes the intent and structure of the ICRMP. Section 2.0 describes the historic and archaeological resources located at WFF and their significance to the cultural life of WFF, the local community, and to the nation as a whole. Section 3.0 assembles cultural resources planning regulations, procedures, and recommendations. Section 4.0 provides standard operating procedures with which to address cultural resources issues at WFF. Specific preservation and conservation guidance for WFF archaeological and historic resources is included in Section 5.0. Section 6.0 is a list of references, followed by technical appendices that can serve as a reference guide for cultural resources personnel and WFF's administration.

1.5 HIGHLIGHTS OF OPERATIONAL GUIDANCE

WFF's current operations and resources profile indicate the following recommended actions:

- Complete a re-evaluation of the efficacy of the 2003 archaeological predictive model.
- Pre-construction archaeological review will be undertaken in a timely fashion for WFF ground-disturbing operations, with special attention to areas not yet subject to archaeological survey. Review will be conducted according to the terms of the Programmatic Agreement (PA) among NASA, the Virginia State Historic Preservation Officer (SHPO), and the ACHP

regarding the management of facilities, infrastructure, and sites at WFF (**Appendix B**). Depending on review findings, this process could lead to evaluation of identified archaeological resources, and mitigation measures for significant resources.

- Develop a management plan for the Military Earthworks (44AC0089). Although this site has not formally been determined eligible for listing in the National Register in consultation with the Virginia SHPO, per the terms of the PA, the site will be treated as a historic property.
- Conduct National Register eligibility evaluations for architectural resources on the WFF that are 45 years of age or older and for architectural resources less than 50 years old that may have exceptional significance.
- Re-evaluate the National Register eligibility of architectural resources that were previously evaluated prior to their turning 50 years of age to address the passage of time, changing perceptions of significance, subsequent changes to the property, or incomplete prior evaluations.
- Undertake an alternatives analysis to evaluate the future preservation, use, or disposition of the Wallops Beach Life Saving Station (VDHR #001-0027-0100) and associated Observation Tower (VDHR #001-0027-0101), currently the only National Register-eligible architectural resources at WFF, in accordance with the terms of the PA among NASA, the Virginia SHPO, and the ACHP.

These requirements along with WFF current standard operating procedures (Section 4.0), address NHPA requirements for WFF. The following sections provide detail useful for the understanding and implementation of these requirements.

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2.0 OVERVIEW OF THE HISTORY AND RESOURCES AT WFF

2.1 INTRODUCTION

In order to manage the cultural resources at WFF, it is necessary to understand the resources themselves as well as the regulatory framework through which they were identified as significant and worthy of special treatment. This section describes WFF's facility, its mission, and natural setting. It also provides an overview and assessment of the archaeological and architectural resources currently identified at WFF, including those listed in or eligible for listing in the National Register, and the findings of previous cultural resources investigations.

2.2 DESCRIPTION OF THE FACILITY AND MISSION STATEMENT

NASA Goddard Space Flight Center owns and operates WFF. WFF is located in northeastern Accomack County on the Eastern Shore of Virginia's portion of the Delmarva Peninsula (**Figures 2-1 and 2-2**). The approximately 6,500-acre facility is composed of three separate land masses: Wallops Main Base, Wallops Mainland, and Wallops Island. The Main Base comprises 1,800 acres situated north and west of Watts Bay, Simoneaston Bay, and Jenny's Gut and south of Little Mosquito Creek. Main Base facilities include offices, laboratories, maintenance and service facilities, a NASA-owned airport, air traffic control facilities, hangars, runways, and aircraft maintenance and ground support buildings. In addition, there are water and sewage treatment plants, rocket motor storage magazines, National Oceanic and Atmospheric Administration (NOAA) administrative and tracking facilities, U.S. Navy administration and housing as well as U.S. Coast Guard housing, and other miscellaneous facilities.

Wallops Mainland consists of 100 acres with radar, communications, and optical tracking installations. Wallops Mainland is immediately inland across Cat's Creek from Wallops Island, and is connected to the island by a causeway. Wallops Island extends south along the Atlantic Coast from the Chincoteague Inlet, and encompasses 4,600 acres, most of which is marshland. Wallops Island includes launch and testing facilities, blockhouses, rocket storage buildings, assembly shops, dynamic balancing facilities, tracking facilities, U.S. Navy and Mid-Atlantic Regional Spaceport facilities, and other related support structures. The Mid-Atlantic Regional Spaceport is a commercial spaceport operated by the Virginia Commercial Space Flight Authority, which leases the land at WFF from NASA and is licensed by the Federal Aviation Administration for orbital launches.

2.2.1 Mission Statement

During its early history, the mission of the WFF was primarily to serve as a test site for aerospace technology experiments. Over the last several decades, the WFF mission has evolved toward a focus of supporting scientific research through carrier systems (i.e., airplanes, balloons, rockets, and uninhabited aerial vehicles) and mission services. Under Wallops Flight Facility Mission 2005, WFF rebalanced its mission, continuing its strong operation and technology support for the science community, while renewing its emphasis on support to NASA's goals. The Mission 2005 Plan was developed with the goals of leveraging the unique capabilities of WFF and providing high value to NASA's enterprises, while ensuring stability and a bright future for the facility and its workforce" (NASA 2002b).

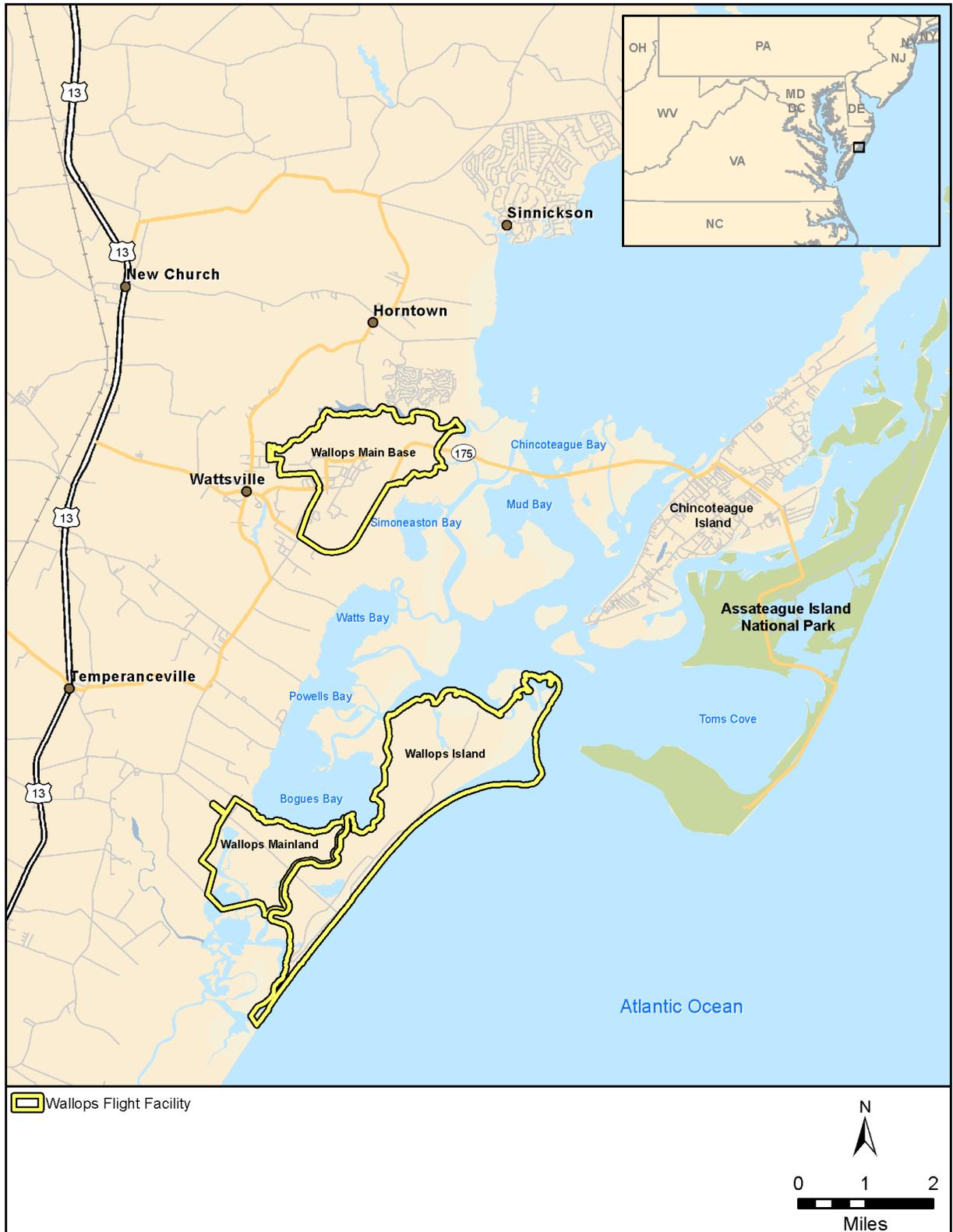


Figure 2-1. Location of Wallops Flight Facility

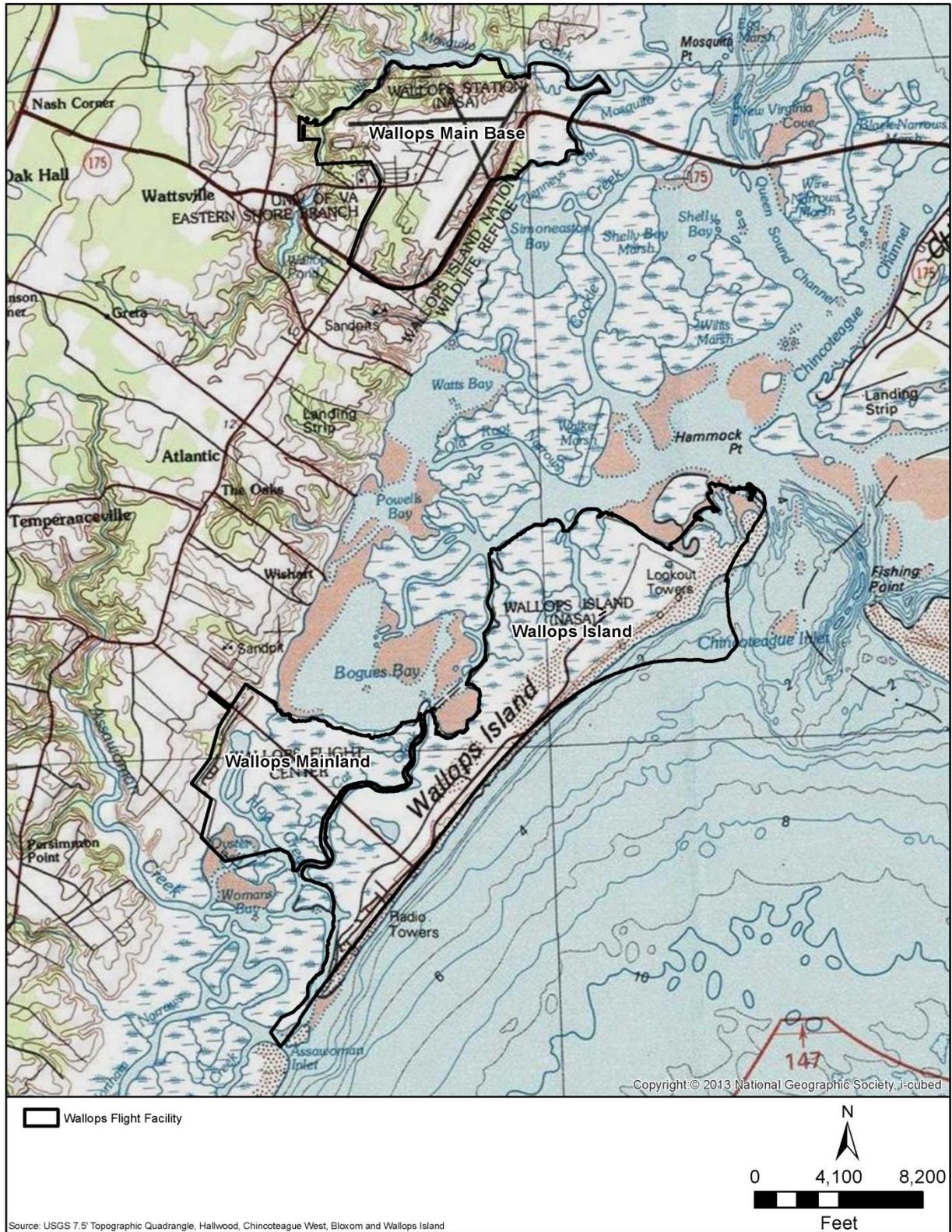


Figure 2-2. WFF Main Base, Mainland, and Wallops Island

WFF recently affirmed that the vision and mission elements in that strategic plan will continue to guide operational priorities in the coming years. WFF has developed a set of strategic management goals with a focus on providing the Center's direction for the future. These strategic management goals include:

- Be the Nation's preferred provider of sub-orbital and small orbital research carriers and mission services;
- Develop and infuse technologies that increase capability and reduce risk or cost of WFF carriers and range systems;
- Conduct and support meaningful science that is appropriate to the carriers, location, special capabilities, and partnerships that are available at or through WFF;
- Provide, through partnerships, hands on authentic experiences in aerospace for students and educators to increase interest in Science, Technology, Engineering, and Mathematics disciplines and careers;
- Provide quality training and leadership development for NASA's workforce, WFF employees, and education stakeholders; and
- Provide a workforce and capabilities that can enable WFF and its tenants and partners to be leaders in the field.

2.3 NATURAL SETTING

2.3.1 Vegetation and Wildlife

Vegetation for the area varies with landform association. The following vegetation areas are found on the Wallops Main Base and Wallops Mainland (mainland landform): loblolly pine, black cherry, red maple, black willow, sassafras, and wax myrtle (NASA 1999; URS/EG&G 2005). Wallops Island (barrier island landform) vegetation includes seabeach orach, common saltwort, sea rocket, American beachgrass, seaside goldenrod, northern bayberry, wax myrtle, groundsel-tree, common reed, poison ivy, greenbrier, loblolly pine, cherry, and duckweed (NASA 1999). The tidal marsh areas between Wallops Island and the mainland are dominated by saltmarsh cordgrass and salt meadow cordgrass (NASA 1999; URS/EG&G 2005). Areas of marsh are also located along Mosquito Creek on the northern fringe of the Main Base (NASA 1999; URS/EG&G 2005). Areas of lawn are maintained in all three areas of the WFF.

Both terrestrial and aquatic faunal species are found throughout the WFF (NASA 1999; URS/EG&G 2005). Invertebrate species include a variety of insects, snails, and crabs. In addition, sand shrimp, moon jelly, and squid are also found. Fish species include sand shark, smooth dogfish, smooth butterfly ray, bluefish, pipefish, spot, croaker, sea trout, and flounder. Amphibian and reptile species include Fowler's toad, green tree frog, black rat snake, hognose snake, box turtle, and northern fence lizard. Several species of sea turtle and whales are also found in the waters of the area. Bird species include several species of sparrows and gulls, red-winged blackbird, boat-tailed grackle, fish crow, gray catbird, mourning dove, swallows, mockingbirds, robins, and starlings. Migratory birds include numerous species of ducks, geese, shorebirds, and songbirds. Predatory birds (raptors) include the osprey, bald eagle, and peregrine falcon. Mammalian species include white-tailed deer, raccoon, red

fox, white-footed mouse, meadow vole, opossum, gray squirrels, and cottontail rabbit (NASA 1999; URS/EG&G 2005).

A variety of special-status species may occur on or within the vicinity of WFF. Special-status species include those listed under both the Federal Endangered Species Act and the Virginia Endangered Species Act as well as those considered by Virginia to be “Species of Greatest Conservation Need.” Those species known to occur on WFF include the loggerhead sea turtle, piping plover, Wilson’s Plover, red knot, and peregrine falcon.

2.3.2 Climate

WFF is located in the climatic region known as the humid continental warm summer climate zone. Large temperature variations during the course of a single year and lesser variations in average monthly temperatures typify the region. The climate is tempered by the proximity of the Atlantic Ocean to the east and the Chesapeake Bay to the west. Also affecting the climate is an air current, known as the Labrador Current, which originates in the polar latitudes and moves southward along the Delmarva coastline. The current creates a wedge between the warm Gulf Stream offshore and the Atlantic Coast. The climate of the region is dominated in winter by polar continental air masses and in summer by tropical maritime air masses. Clashes between these two air masses create frontal systems, resulting in thunderstorms, high winds, and precipitation.

Temperature and precipitation in this climate zone vary seasonally. Four distinct seasons each demonstrate characteristic temperatures. In winter, sustained snowfall events are rare. Spring is wet with increasing temperatures. Summer is hot and humid with precipitation occurring primarily from thunderstorm activity. Autumn is characterized by slightly decreasing temperatures and strong frontal systems with rain and sustained winds.

2.3.3 Topography

The topography at WFF is typical of the Mid-Atlantic coastal region, and is mostly flat without unusual features. Wallops Island is separated from the Main Base and Wallops Mainland by numerous inlets, marshes, bays, creeks, and tidal estuaries. During storms, flood water from the Atlantic Ocean moves through these inlets and across the marshes to low-lying areas along the coast.

WFF lies within the Tidewater region of the Embayed section of the Atlantic Coastal Plain Physiographic Province. The three major landforms found at the WFF are mainland, tidal marsh, and barrier island. The mainland includes low and high terraces separated by a discontinuous escarpment at 25 feet above mean sea level (AMSL). Low terraces are found east of Route 13 and on the extreme eastern edge of Wallops Mainland. The low terrace consists of broad to narrow flats bordered by tidal marshes to the east and the discontinuous escarpment to the west. The high terrace ranges in elevation from 25 to 50 feet AMSL. The high terrace topography is more complex than the low terrace, and is generally characterized by broad, nearly level terraces that are broken by narrow elliptical ridges (Carolina Bay features), gentle escarpments, tidal creek, and drainage ways. Extensive tidal marshes are located between the mainland and barrier islands. The marshes flood regularly with the tides, are drained by an extensive system of meandering creeks, and have immature soils. Barrier islands are approximately parallel to the mainland and are generally less than 10 feet AMSL. Topography varies from nearly level to steep (U.S. Department of Agriculture, Soil Conservation Service [USDA, SCS] 1994).

The majority of the WFF Main Base is located on a high terrace landform with the northern and eastern portions located on low terraces and tidal marsh. The Wallops Mainland is located primarily on low terrace and tidal marsh, and Wallops Island is a barrier island with extensive tidal marshes between the island and the Wallops Mainland. Presently, the highest elevation on Wallops Island is approximately 15 feet AMSL with the majority of the Island approximately 5 feet AMSL or less. As a barrier island, Wallops Island's topography is influenced by the dynamics of ocean currents, wind erosion, and severe weather conditions but to a different degree than the islands surrounding it. The construction of a rock seawall and regularly nourished beach on the Island's east side has essentially fixed the position of approximately 4 miles of the central and southernmost shoreline.

2.3.4 Stormwater Drainage

The Main Base has both natural drainage patterns and stormwater swales and drains to intercept and divert flow. The natural drainage pattern on the northern portion of the Main Base drains to Mosquito Creek and eventually flows to the Atlantic Ocean. The eastern and southeastern portions of the Main Base have a natural drainage pattern that flows to Simoneaston Bay, then into Cackle Creek, Shelly Bay, and Chincoteague Bay, before draining to the Atlantic Ocean. The natural drainage pattern on the western and southwestern portion of the Main Base is toward Wattsville Branch, and then to Mosquito Creek, and on to the Atlantic Ocean. Stormwater drains on the Main Base intercept natural drainage ditches and divert the flow to numerous discharge locations. Stormwater drains are located throughout the developed portion of the Main Base; the majority of stormwater discharges into the surrounding waterways, and eventually to the Atlantic Ocean.

On Wallops Mainland, the eastern sloping grade forms a natural drainage pattern that flows towards Bogues Bay, Hog Creek, and then to Oyster Bay, Assawoman Creek, and finally the Atlantic Ocean. The northern portion of Wallops Island drains by overland flow to Bogues Bay and Chincoteague Inlet via Sloop Gut and Ballast Narrows. A constructed beach berm on the central and southern portions of the Island and cross-culverts under the Island Road drain stormwater through ditches and flap gates, installed west of Island Road, to Bogues Bay via Hog Creek.

2.3.5 Geology and Soils

The WFF is underlain by approximately 7,000 feet of sediment. The sediment lies atop crystalline basement rock. The sedimentary section, ranging in age from Cretaceous to Quaternary (135 million years ago to present), consists of a thick sequence of terrestrial, continental deposits overlain by a much thinner sequence of marine sediments. These sediments are generally unconsolidated and consist of clay, silt, sand, and gravel that date to the Quaternary Period (circa [ca.] two million years ago to present) (Bailey 1999; U.S. Geological Survey 1973).

The regional dip of the geological units is to the east toward the ocean. The two uppermost stratigraphic units at WFF are the Yorktown Formation and the Columbia Group, which is not subdivided into formations. The Yorktown Formation is the uppermost unit in the Chesapeake Group and was deposited during the Pliocene epoch (approximately 2 to 7 million years ago). The Yorktown Formation generally consists of fine to coarse, glauconite quartz sand, which is greenish gray, clayey, silty, and in part, shelly. The Yorktown Formation occurs at depths of 60 to 140 feet in Accomack County (NASA 2002a).

Soils in Accomack County were formed from parent material consisting of transported sediments moved and deposited by marine and stream action (USDA, SCS 1994). Within the area, soils mapped for the

terraces include Bojac, and Molena series. These soils are sands and sandy loams that vary from fine to coarse in texture. Soils mapped for the tidal marshes within the area include Chincoteague and Magotha series. Chincoteague soils are gleyed silt loams. Magotha soils are also gleyed silt loams, but are located in higher elevations within the marshes and have a mature soil profile. These areas were former uplands before they were transformed to tidal marsh by rising sea levels. Soils mapped for the barrier island in the area (i.e., Wallops Island) include beaches, the Camocca series, and the Fisherman-Assateague complex. Beaches are unconsolidated sands with no soil development. The Camocca series and Fisherman-Assateague complex soils formed from sandy sediments and are immature soils.

2.4 HISTORICAL OVERVIEW

Comprehensive prehistoric and historic contexts for WFF are presented in the *Cultural Resources Assessment of NASA Wallops Flight Facility, Accomack County, Virginia* (URS/EG&G 2003), the *Historic Resources Survey and Eligibility Report for Wallops Flight Facility, Accomack County, Virginia* (URS/EG&G 2004a), and the *Historic Resources Eligibility Survey, Wallops Flight Facility, Accomack County, Virginia* (TEC Inc. 2011). All three documents were submitted to and approved by the Virginia SHPO. Summaries of those contexts are included below.

2.4.1 Prehistoric Context

Based on survey and planning work conducted in the Commonwealth, as well as research conducted in the region, the Virginia Department of Historic Resources (VDHR) has defined three major time periods of prehistory: Paleoindian (10,000–8000 Before Christ [BC]), Archaic (8000–1000 BC), and Woodland (1000 BC–Anno Domini [AD] 1600) Periods (**Table 2-1**). The Archaic and Woodland Periods are further subdivided into Early, Middle, and Late Periods, which are characterized by changes in material culture (e.g., stone tools or pottery styles), environmental adaptation, subsistence strategies (e.g., hunting or growing crops), settlement patterns, technology, and socio-political configurations.

Table 2-1. Prehistoric Cultural Chronology		
Culture Period	Sub-Period	Date Ranges
Paleoindian	n/a	10,000 – 8000 BC
Archaic	Early	8000 – 6500 BC
	Middle	6500 – 3000 BC
	Late	3000 – 1000 BC
Woodland	Early	1000 BC – AD 300
	Middle	AD 300 – AD 1000
	Late	AD 1000 – AD 1600
Contact	n/a	ca. AD 1600

Note: n/a = not applicable.

The first habitation of the region began approximately 12,000 years ago with the influx of people who practiced a hunting and foraging lifestyle. These people, commonly referred to as Paleoindians, were heavily dependent on game for their subsistence, and supplemented their diet with fish and plants. They lived in camps on a seasonal or short-term basis, following migrating animal herds. Paleoindian stone tools reflect the emphasis on the processing of animal products, with large fluted spear points for hunting,

a variety of scrapers for preparing hides, as well as multi-functional perforators and knives. Occasional forays would be made to acquire materials for these stone tools, and these forays are reflected in smaller sites, apart from the base camps. These sites include quarries, quarry reduction stations, where rock was reduced to a more portable size, and camp sites associated with these activities. Evidence of Paleoindian people is scarce on the Virginia Coastal Plain, and occurrences of Paleoindian artifacts on the Delmarva Peninsula are limited to isolated finds of projectile points (spear or dart points). One theory explaining the lack of documented Paleoindian sites is that they are located on the Continental Shelf of the Atlantic Ocean in areas that would have been dry land during the Paleoindian Period, but were gradually inundated as temperatures rose, melting glaciers and causing the water level to rise (e.g., Dent 1995; Lowery 2001, 2003).

The highly mobile society of the Paleoindian Period was to gradually shift, during the Archaic Period, to an increasingly sedentary society that focused more on the local natural resources available along large rivers and major tributaries. Both Gardner (1974) and Custer (1980) have hypothesized that during the Early Archaic Period, people banded together into macro-base camps, or groups of families, in the spring and summer, and dispersed into smaller micro-base camps in the fall and winter months. A greater variety of animals and plants became the subsistence of these people, and the diversification and specialization of stone tools that were developed during this time reflect the multiple products that they were processing. These tools included: grinding slabs, milling stones, and nutting stones for the processing of plant foods; gouges, axes, and adzes for manufacturing items of wood; and smaller and more diverse projectile points, frequently featuring stems and notches at the base. By the Late Archaic Period, structures such as fish weirs become apparent, indicating the exploitation of migrating fish and therefore the increase of fish in the diet. Such diverse resources for foods resulted in surpluses and the need to store and preserve them. This need was met by the innovation of subterranean storage pits and soapstone containers. Numerous sites dating to the Archaic Period are found throughout the Delmarva Peninsula.

During the Woodland Period people became increasingly sedentary, although groups retained some mobility to take advantage of seasonally available resources, such as migrating fish in the spring and early summer, and shellfish in the autumn and early winter. Subsistence patterns are similar to the Late Archaic Period, although with an increasing reliance on marine resources and cultivated plants (Dent 1995; Lowery 2001, 2003). The same types of tools were available, although adapted into different styles, and bone tools, such as awls and needles, are added to their tool kits. Food surpluses resulted in a population increase, and settlements become increasingly larger, leading to the development of a hierarchical type of political organization in the form of chiefdoms. The major innovation which differentiates the Woodland from the Archaic Period is pottery, which was easier to produce and more portable than stone containers. This period is also marked by the intensification of burial ceremonialism involving elaborate cremation burials with funerary offerings. By the Late Woodland Period, cultivated crops come to play an important role in subsistence for most of North America. Some researchers (e.g., Lowery 2001, 2003) suggest, however, that agriculture did not play a significant role on the Delmarva Peninsula. Hunting, gathering, and fishing, rather than agriculture, formed the basis of a subsistence economy. Sites dating to the Woodland Period are found throughout the Delmarva Peninsula.

The Contact Period was marked by the entrance of Europeans into the region, around AD 1600. Native American populations generally continued to follow settlement and subsistence patterns consistent with the Woodland Period. Although records of European interactions with native populations exist for Contact Period eastern North America, little information is available on Eastern Shore groups in

particular as a result of the general lack of European settlement in the vicinity during the early Contact Period. Contact Period Sites are rare on the Delmarva Peninsula, although a handful of sites have been documented in the Delaware and Maryland portions of the peninsula (Lowery 2001, 2003).

2.4.2 Historic Context

Based on survey and planning work conducted in the state, as well, as research conducted in the region, the VDHR has defined a sequence of time periods for understanding cultural developments during the historic period in Virginia (VDHR 2011a). These periods are summarized in **Table 2-2** for reference. The discussion that follows is a brief summary of the historic contexts in URS/EG&G (2004a) and TEC Inc. (2011).

Table 2-2. Historic Cultural Chronology	
Culture Period	Date Ranges
Settlement to Society	AD 1607 – 1750
Colony to Nation	AD 1751 – 1789
Early National Period	AD 1790 – 1829
Antebellum Period	AD 1830 – 1860
Civil War Period	AD 1861 – 1865
Reconstruction and Growth	AD 1866 – 1916
World War I to World War II	AD 1917 – 1945
The New Dominion	AD 1946 – present

The first European settlement of the present Wallops Flight Facility occurred in the seventeenth century (Miller 1991). In 1664, King Charles II of England granted a 1,000-acre parcel of land on the nearby Eastern Shore mainland to John Wallop. Two years later, Wallop’s patent was reissued with an additional 700 acres. Wallop continued to add to his land holdings during the last decades of the seventeenth century through land grant from the English monarchy and by purchase. Wallop was appointed the Surveyor-General for the Eastern Shore; thus, many period maps identify land as Wallop’s Neck, Wallop’s Creek, and Wallop’s Island, which was previously known as Kekotank or Accocomson Island. In his capacity as surveyor, Wallop laid out the town of Port Scarborough, (now Onancock) as well as a north-south road through the Eastern Shore, which U.S. Route 13 approximately follows today. Wallop’s plantations grew tobacco and corn, raised pigs and cattle, and supplied lumber (Miller 1991). Wallop used the Island for grazing cattle, a common practice on many of the small, barrier islands that lay a good distance from the more densely settled and commercially active “bay side” of the peninsula (Krieger 1976; Turman 1964). Wallop also exported his products to the West Indies. Prior to his death, Wallop divided his land amongst his two children and may have sold off several portions. Wallops Island remained in the hands of Wallop’s descendants through the eighteenth and most of the nineteenth centuries (Turman 1964).

A small fort was established on the north end of the island during the Revolutionary War (Miller 1991). The Eastern Shore, with its inlets, tributaries, marshes, creeks, and streams, provided numerous waterways that could be invaded by the English. Records mention at least two cannons located in the small fort of Wallops, to protect the opening between Wallops Island and Chincoteague Island (Krieger 1976).

The Wallops Island Association was formed by a group of sportsmen who used Wallops Island for hunting, fishing, and swimming. In 1889, Wesley K. Woodbury of Wrightsville, PA purchased 2,000 acres of land on Wallops Island as a trustee of the Wallops Island Association (Reidenbaugh 1978). In 1933, the Association became the Wallops Island Club whose members erected a large club house on the northern portion of the island for their seasonal forays (Turman 1964).

Government association with Wallops Island began in 1883, with the establishment of a Lifesaving Station on the north end (Turman 1964). The Lifesaving Service became the U.S. Coast Guard in 1915. In 1933, a series of hurricanes caused significant damage to the station, leading to the construction of a replacement facility in 1936 (Turman 1964).

In 1942, the U.S. Navy established the Naval Auxiliary Air Station on what is now the Main Base (NASA 1994; Turman 1964). Runways and support buildings were added the following year and the station was renamed the Chincoteague Naval Auxiliary Air Station. The facility was used for training naval aviation units for the war effort.

In 1945, the National Advisory Committee on Aeronautics' (NACA) Langley Field Research Center established a base on Wallops Island and that June launched its first rocket from the facility. NACA initially purchased 85 acres and leased an additional 1,000 acres on the southern end of the island from the Wallops Island Club (NASA 1994; Turman 1964). Temporary facilities were constructed, including several Quonset huts to serve as housing for those stationed at the research facility (NASA 1994). That same year, the U.S. Government purchased an 8,809-acre parcel of land on nearby Assateague Island to form the Chincoteague National Wildlife Refuge. After World War II, NACA began constructing permanent facilities to support its operations on Wallops Island. The earliest surviving structure from this period is the General Services Building (1946; WFF# X-055), which served as a headquarters and general administration building. In 1946, the U.S. Navy expanded the mission of the Chincoteague Naval Air Auxiliary Station by establishing the Naval Aviation Ordnance Test Station.

By 1949, the U.S. government had purchased the remainder of Wallops Island, which was used by both the Navy and NACA in the north and southern halves of the island respectively (NASA 1994; Turman 1964). Construction of permanent facilities relating to NACA's expanding missions of rocket and model testing continued throughout the late 1940s and early 1950s.

The race between the United States and the Soviet Union to launch the first orbital vehicle intensified in the 1950s. A pivotal event in that race occurred in the fall of 1957 when the U.S.S.R. launched Sputnik I and II. In response, the United States formed the National Aeronautics and Space Administration through the National Aeronautics and Space Act of 1958. NACA's missions were superseded by the new agency, and missions throughout its facilities were augmented.

While orbital capability put America back in the Space Race, the real goal was to launch a piloted spacecraft. Plans for piloted orbit were being considered at Wallops as early as 1958. Driven by the military's intention to keep piloted spacecraft under their own jurisdiction, representatives from Langley's Research Laboratory approached the president about a piloted space program. The president agreed to place this research under the new space agency in late 1958. The Space Task Group was created and Project Mercury began (Wallace 1997).

Wallops Island provided much needed privacy to conduct testing on Project Mercury. America's perceived lag in the Space Race magnified any failure, even during testing. The trial and error tests on Wallops Island did not need to be highly visible. Research was conducted on the Mercury capsule's stability (this model capsule would become the orbiting vehicle for the first U.S.-piloted space flight) and its reaction to aerodynamic heating. Between 1958 and 1959, 26 full size capsules and 28 scale models were launched at Wallops Island (DeVincent-Hayes and Bennett 2001).

The interest and enthusiasm for piloted spacecraft drew people to Wallops Station. Surprisingly, the facility welcomed the visitors, and even set up bleachers near the launch site. The spectacle reached its pinnacle when Sam and Miss Sam, a pair of chimpanzees, were launched from Launch Area 1 in a test of the Mercury capsule (Shortal 1978). Sam was launched to an altitude of 53 miles and Miss Sam was used to test the reactions and stress caused by a launch aborted through the escape tower (Wallace 1997). Sam was launched on December 4, 1959 and Miss Sam was launched on January 21, 1960. One hundred photographers and celebrities watched the launch, including the astronauts scheduled to fly in a Mercury Capsule in April 1961.

In July of 1959, NASA officially assumed control of the Chincoteague Naval Auxiliary Air Station through an agreement with the Navy. The land transfer was officially approved in 1961. NASA also purchased 100 acres on the Wallops Mainland. The entire facility was renamed Wallops Station at that time (NASA 1994).

In 1961–1962, Wallops underwent a period of transition associated with the reorganization of responsibilities within NASA. When the Space Task Group was moved from Langley to Houston, the testing related to the Space Task Group missions was transferred out of Wallops to White Sands, New Mexico. As a result, Wallops began focusing on space science research (TEC Inc. 2011).

Several government agencies utilized Wallops Station, including the Federal Aviation Administration, the National Bureau of Standards, and most importantly, the Weather Bureau. The Weather Bureau had been interested in the usefulness of Wallops Island for gathering atmospheric data since 1958 or earlier, but the sounding rocket allowed them a more reliable means of gathering information. Sounding rockets launched balloons to high altitudes, allowing the balloon to record data on its slow descent (Wallace 1997). By 1965, the Weather Bureau had a regular launch schedule at Wallops Station.

The use of satellites in gathering atmospheric data was also employed at Wallops Station. The Television Infra-Red Observation Satellite (TIROS) was initially launched at Fort Monmouth, New Jersey, but the placement of Fixed Radar Surveillance 16 (FPS-16) Radar encouraged the move of TIROS to Wallops Island. TIROS allowed pictures of weather systems to be generated and enable the Weather Bureau to track storms. The second TIROS satellite was launched from Wallops Island in June 1961 (Wallace 1997).

In 1974, NASA changed the name of its Wallops facility to Wallops Flight Center, reflecting its new foray into runway surface and aircraft noise reduction research, while continuing its role as a launch site for orbital and suborbital flights (a flight in which a spacecraft follows a trajectory of less than one orbit). In fact the mission of Wallops Flight Center expanded in the 1970s to include management of suborbital projects. Additionally, the facility also added earth studies of ocean processes to its research program.

In 1981, Wallops Flight Center was consolidated with the Goddard Space Flight Center and renamed the Wallops Flight Facility. WFF became NASA's primary facility on suborbital programs. In the 1990s, the

facility’s mission expanded to include shuttle-based and small orbital projects. It continued its relationships with universities, government programs, and commercial clients, and also continued its research into atmospheric conditions and weather (URS/EG&G 2004a).

2.5 PREVIOUS CULTURAL RESOURCES INVESTIGATIONS

2.5.1 Archaeological Investigations

Eleven archaeological sites have been identified on the Wallops Flight Facility (**Table 2-3; Figures 2-3 and 2-4**). These sites are discussed in more detail in URS/EG&G (2003), Espenshade and Lockerman (2009), and Espenshade (2011a). Three of the sites (44AC0089, 44AC0103, and 44AC0159) were identified by J. Mark Wittkofski in 1980 as part of a survey of Northampton and Accomack Counties. Site 44AC0089 has been subject to additional documentation and re-evaluation since its initial identification in 1980 (Espenshade and Lockerman 2009). Five sites (44AC0405, 44AC0437, 44AC0459, 44AC0556, and 44AC0567) were investigated as part of Section 106 compliance surveys; one of these, site 44AC0556, was an unanticipated find discovered during construction by NOAA. The ninth site (44AC0558) was partially excavated by the Eastern Shore Archaeological Society in 1996 (Greenley 1997).

Site Number	Site Type	Location	National Register Eligible?	Cultural Period
44AC0089	Military Earthworks	Wallops Island/north	Recommended Eligible ¹	Revolutionary War
44AC0103	Matthews House and associated grave/cemetery	Main Base south airfield	Not Evaluated	18 th Century (ca. 1788)
44AC0159	Shell Pile	Wallops Island/south	Determined Not Eligible	Unknown Historic
44AC0405	Artifact Scatter	Main Base/Navy housing	Recommended Not Eligible	19 th Century
44AC0437	Artifact Scatter	Main Base/across Wattsville from Runway 10	Not Evaluated	18 th and 19 th Centuries
44AC0459	Trash scatter associated with U.S. Coast Guard Station	Wallops Island/north	Determined Not Eligible	Late 19 th and 20 th Centuries
44AC0556	Trash pit and Funerary, single grave	Main Base/NOAA	Determined Not Eligible	Late Woodland and 19 th Century
44AC0558	Temporary Camp	Mainland	Recommended Eligible; Have not sought concurrence	Possible Middle Archaic; Woodland; possible Historic
44AC0562	Artifact Scatter	Mainland	Recommended Not Eligible; Have not sought concurrence	18 th and 19 th Centuries
44AC0563	Artifact Scatter	Mainland	Recommended Not Eligible; Have not sought concurrence	18 th and 19 th Centuries
44AC0567	Trash Dump	Mainland	Determined Not Eligible	20 th Century

Sources: Dinnell and Collier 1990; New South Associates 2010; VDHR 2004b, 2010a, 2010b, 2010c, 2011c, 2011d.

Note: 1. Site 44AC0089 was recommended eligible for listing in the National Register (Espenshade and Lockerman 2009), but a formal determination of eligibility, in consultation with the Virginia SHPO, has not been conducted. However, Site 44AC0089 is identified in the PA among NASA WFF, the Virginia SHPO, and the ACHP (refer to Section 3.2.5) as a property that is eligible for inclusion in the National Register.

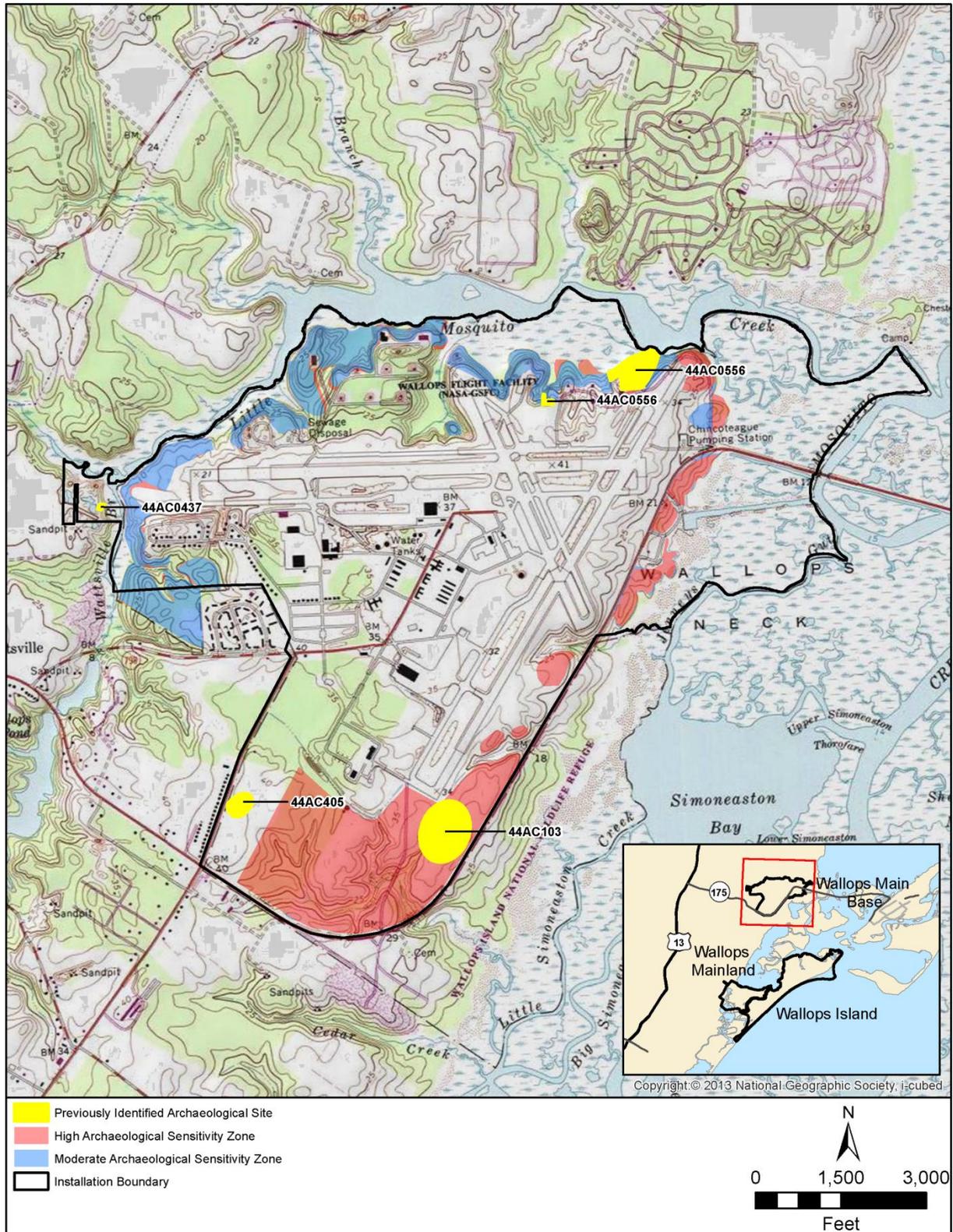


Figure 2-3. Archaeological Sensitivity Areas and Known Archaeological Sites on WFF Main Base

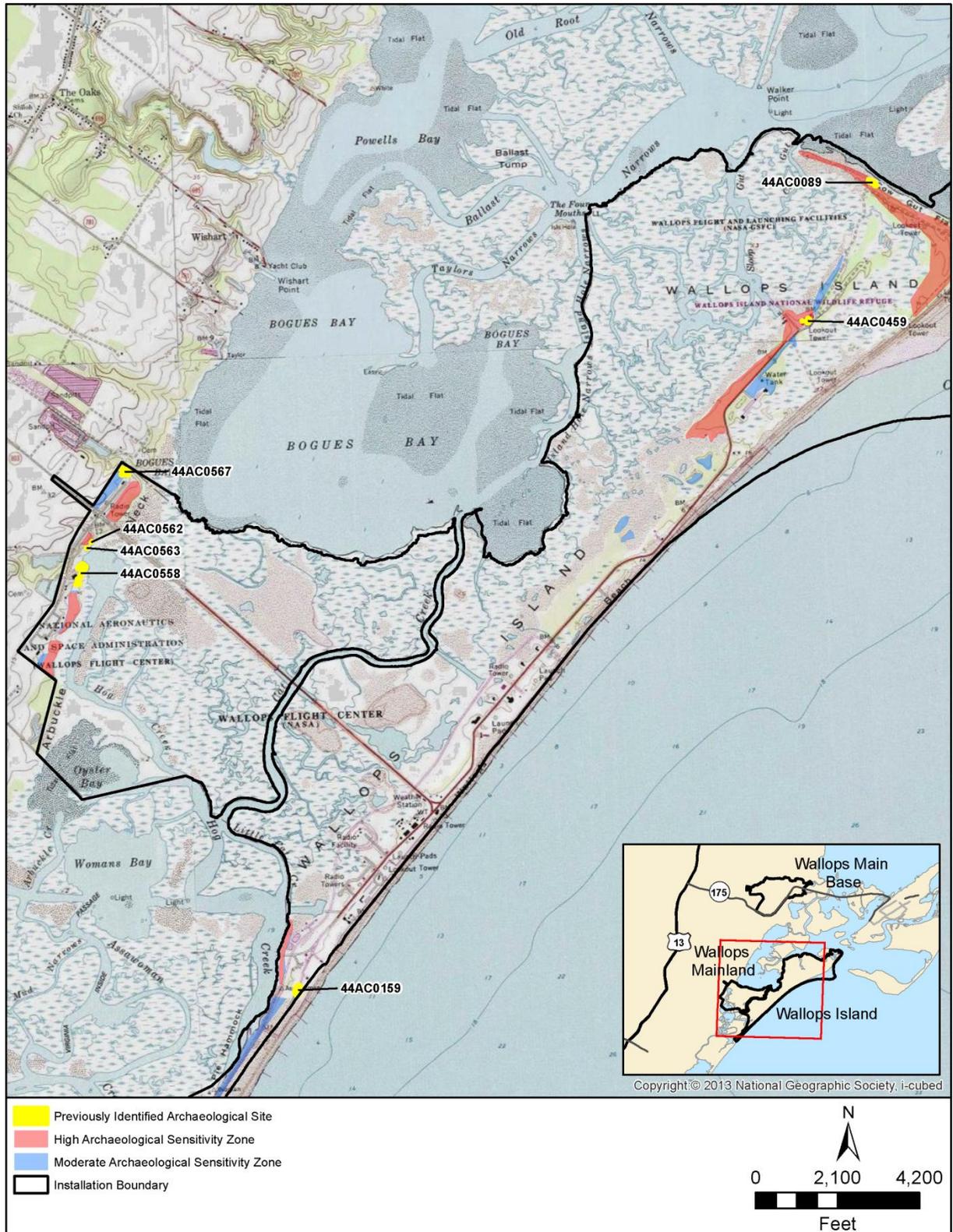


Figure 2-4. Archaeological Sensitivity Areas and Known Archaeological Sites on WFF Mainland and Wallops Island

No archaeological sites at WFF have been determined eligible for listing in the National Register. Two sites (44AC0089, 44AC0558) have been recommended eligible for listing in the National Register. Two sites (44AC0103, 44AC0437) have not been evaluated for National Register eligibility. Three sites (44AC0405, 44AC0562, 44AC0563) have been recommended as not eligible for inclusion in the National Register, and four sites (44AC0159, 44AC0459, 44AC0556, 44AC0567) have been determined to be not eligible for listing in the National Register. With regard to sites of concern for planning purposes, the two sites that are recommended as eligible for the National Register (44AC0089, 44AC0558) and the two sites unevaluated for the National Register (44AC0103 and 44AC0437) are located in areas not planned for development.

Several cultural resources studies have been conducted on the Virginia Eastern Shore. Studies conducted in the vicinity of the facility are detailed in the Cultural Resources Assessment (URS/EG&G 2003). Summaries of projects conducted on the WFF are included below. **Table 2-2** contains a prehistoric chronology for the region.

One archaeological site (44AC0103) associated with a ca. 1788 house is located in the southeastern portion of the Main Base. The house was associated with the Matthews family and was inventoried as VDHR ID# 01-0155. The building was demolished in the 1950s during expansion of the runway. It is unclear if subsurface portions of the site have been destroyed, or if portions remain intact.

In 1980, Mark Wittkofski conducted a Phase I reconnaissance for a proposed parking lot on Wallops Island for the U.S. Navy. He determined the facility had low sensitivity for archaeological resources since it had been previously disturbed and graded with modern fill (Wittkofski 1980).

Greenhorne and O'Mara, Inc. (Dinnell and Collier 1990) conducted a study of the southwestern portion of the Main Base for the Naval Facilities Engineering Command. One nineteenth century historic trash scatter (44AC0405) was identified and recommended as not eligible for nomination to the National Register.

Telemarc, Inc. conducted an archaeological survey adjacent to the WFF in 1991. This study was conducted as part of a property acquisition west of runway 10/28 (Otter 1991). One eighteenth or nineteenth century historic artifact scatter (44AC0437) was identified.

In 1991, 3D/Environmental Services, Inc. (Miller 1991) completed a cultural resources inventory, including architectural and archaeological resources, for the WFF. This study was intended to produce a predictive model and sensitivity assessment for archaeological resources, as well as function as a planning document for future development of the WFF. A study conducted by URS/EG&G in 2003 served as an expansion and update of the 1991 study. The 2003 study involved conducting an assessment-level investigation of the entire WFF, which resulted in the *Cultural Resources Assessment of NASA Wallops Flight Facility, Accomack County, Virginia* (URS/EG&G 2003). The project included background research and field reconnaissance involving assessing land forms for their archaeological potential. The study superseded the earlier cultural resources assessment prepared by 3D/Environmental Services, Inc. in 1991. The overall purpose of the reconnaissance effort was to comply with direction received from the VDHR in response to previous studies prepared for WFF property, and to provide a basis for managing cultural resources at the WFF in compliance with the requirements of Sections 106 and 110 of the NHPA.

The 2003 study established a predictive model for understanding the archaeological potential at WFF, with areas of high, moderate, and low potential. Areas that contain moderate and high archaeological sensitivity are located, for the most part, along the fringes of the WFF. These areas are not likely to be disturbed or developed due to their location next to wetlands. Prior ground disturbances limit the archaeological potential of many parts of WFF. Causes of these disturbances include past erosion by the wind and sea on Wallops Island, as well as construction, demolition, and landscaping from mission-driven improvements in all parts of the facility. The report recommended that unsurveyed areas should be considered in future planning and inventory studies, and that future intensive archaeological survey (Phase I survey) should be conducted in areas of high archaeological sensitivity. In previously disturbed areas of moderate or high archaeological sensitivity, project-driven (Section 106) archaeological survey would, in most cases consist of less intensive, Phase IA survey (record review and brief field reconnaissance), of any future projects' proposed Area of Potential Effects (APE). An important part of such survey would involve desk review and field confirmation of prior construction/demolition disturbance, which has been extensive as a result of frequent mission-driven changes in WFF's built environment since the facility's initial aeronautic use by the Navy in 1942. Undisturbed areas of moderate or high archaeological sensitivity would be subject to more intensive field study in conformance with VDHR's archaeological survey standards (VDHR 2011a). **Appendix C** includes VDHR's letter of acceptance of the WFF archaeological predictive model.

The high, moderate, and low archaeological sensitivity zones and known archaeological sites identified by the study have been incorporated into cultural resources Geographic Information System (GIS) layers used for planning purposes by the facility. The model is used to help identify potential archaeological impacts of WFF projects and is used in WFF's NHPA Section 106 consultation with the Virginia SHPO. **Figures 2-3 and 2-4** show the moderate and high archaeological sensitivity zones on WFF.

In March 2004, URS/EG&G (2004b) conducted a Phase I archaeological survey for a proposed wetlands mitigation project located immediately northeast of the Wallops Beach Life Saving Station (VDHR #001-0027-0100) on Wallops Island. According to the Cultural Resources Assessment, the facility was located in an area of moderate to high sensitivity for historic archaeological resources, and low sensitivity for prehistoric archaeological resources. As a result of the Phase I survey, a late nineteenth through twentieth century site was identified (site 44AC0459). In addition, one eighteenth century artifact (scratch blue, white salt-glazed stoneware) was recovered during the Phase I survey. This artifact, however, was considered an isolated find and not representative of an eighteenth century component on the site. Site 44AC0459 represents late nineteenth and early twentieth century trash disposal associated with the former U.S. Coast Guard Station, as well as mid- to late-twentieth century activities associated with later use of the property by the U.S. Navy and NASA.

Site 44AC0459 was considered to represent the northern fringe of a larger site that included the former U.S. Coast Guard Station (located approximately 600 feet to the southwest of the current facility). The site, as defined by the 2004 study, was considered unlikely to yield significant information concerning the history of the former U.S. Coast Guard Station. The mixed context of the artifacts (mid-eighteenth through twentieth centuries) and recent disturbances limited the research potential of the site. It was determined that the proposed wetlands construction would not impact significant archaeological resources, and no further archaeological work was recommended. The Virginia SHPO concurred with these recommendations (VDHR 2004b).

In June 2005, the U.S. Army Corps of Engineers, Norfolk District conducted salvage archaeology on a human grave (44AC0556) and subsequent monitoring in association with a parking lot and sewer line construction on the NOAA facility (NOAA 2005). Based on the Cultural Resources Assessment, the facility was considered to have moderate sensitivity for both prehistoric and historic archaeological resources (URS/EG&G 2003). In addition to the human remains exhumed from the disturbed grave feature, a wooden stain, likely originating from a decomposed wooden coffin, was noted along with recovered cut nails and evidence of a shroud pin. The age, gender, and race of the individual as well as the age of the burial itself are unknown; however, based on the associated artifacts recovered from the burial, it is likely that the grave dates to the pre-1900 AD era (NASA 2005). The monitoring for the parking lot resulted in the identification of two prehistoric shell pit features, one of which appears to date to the Late Woodland Period (ca. AD 1000–1600) (NOAA 2005). Following excavation of the burial and monitoring of the parking lot construction, NOAA consulted with the Virginia SHPO in July 2005. NOAA summarized the events associated with the inadvertent discovery, the steps taken to mitigate the burial site, and the results of subsequent monitoring of the remaining construction activities, including a finding of no adverse effect, as the prehistoric shell pit features were recommended as not eligible. The Virginia SHPO concurred with this finding on August 8, 2005 (VDHR 2005). NOAA also published a public notice in the local papers for four consecutive weeks in an attempt to inform the public of the discovery and exhumation of the burial, as well as to attempt to elicit additional information regarding the identity or cultural affiliation of the individual (NASA 2005). No responses were received. Site 44AC0556 also fell within the APE of a proposed installation of GOES-R antennas at the Wallops Command and Data Acquisition Station, which was subject to a Phase I survey in 2010 and subsequently identified as the only archaeological site within the APE. The site was again assessed as not eligible for nomination to the National Register, and the Virginia SHPO concurred with this assessment and the finding of no adverse effect to historic properties as a result of the proposed project on August 25, 2010 (VDHR 2010a).

In 2006, URS conducted a Phase I archaeological survey for a mainland security fence replacement project. No archaeological resources were identified as a result of the survey (VDHR 2011c).

Between August 20 and September 20, 2007, archaeologists affiliated with the James River Institute for Archaeology conducted a Phase I cultural resources survey of a 100-acre APE for the proposed NASA, Chincoteague Bay Field Station of the Marine Science Consortium, and Accomack County's joint Wallops Research Park. Three isolated finds were recommended not eligible for nomination to the National Register and no further archaeological work was recommended. The Virginia SHPO concurred with this finding on February 22, 2008 (VDHR 2008).

In June and July 2009, New South Associates conducted a Phase I subsurface survey of a proposed Uninhabited Aerial Systems Airstrip on Wallops Island, and an evaluation of a previously recorded Revolutionary War-era earthwork site. This site (44AC0089) consists of the remnants of a small Revolutionary War earthwork fort, and was the only archaeological resource encountered during the course of the inventory. New South Associates recommended the site as eligible for the National Register (refer to Section 2.5.3 for more information). In addition, future excavation of the site may yield information on the history of military activities on Wallops Island (Espenshade and Lockerman 2009). The undertaking was subsequently redesigned to avoid adverse effects to this site. In a letter dated January 10, 2011, the Virginia SHPO concurred with NASA's treatment of the site and the determination of no adverse effect (VDHR 2011d). During the development of the PA among NASA, the Virginia

SHPO, and ACHP, Site 44AC0089 was identified as National Register-eligible, and for the purpose of NHPA compliance, the HPO will treat the site as a historic property.

In 2010, WFF considered implementing a wetland banking project by either enhancing or creating wetlands in various location on the Mainland and Wallops Island. During May 2010, New South Associates conducted both pedestrian and stratified archaeological surveys of the areas of high and moderate probability for cultural resources within the APE. Three archaeological resources were identified within the APE. Two (44AC0562, 44AC0563) were recommended as not eligible for the National Register. One site (44AC0558) was recommended as potentially eligible under Criterion D. This survey delineated the boundary of 44AC0558, but New South Associates was unable to place the site in a specific temporal period. Further work is recommended at this site prior to any ground disturbing activity (New South Associates 2010).

In September 2011, New South Associates completed two additional archaeological surveys, both on Wallops Mainland: one of the U-012 Tract and another of the proposed Mission Launch Command Center (MLCC) Tract. No archaeological resources were identified during the U-012 Tract inventory (Espenshade 2011a). The survey of the MLCC Tract resulted in the identification of a single archaeological resource consisting of a mid-twentieth century trash dump or specialized activity area, possible representative of a historic still (44AC0567). This site lacked integrity and was recommended not eligible for listing in the National Register (Espenshade 2011b). The Virginia SHPO concurred with this recommendation on November 18, 2011 (VDHR 2011c).

2.5.2 Architectural and Historical Investigations

A total of 201 buildings, structures, and objects have been surveyed and evaluated for National Register eligibility. Two hundred of the resources were inventoried during two different Section 110 surveys, and one resource was evaluated as part of a Section 106 undertaking. **Table 2-4** lists the extant surveyed architectural resources on WFF, and **Appendix D** includes maps identifying the locations of the surveyed resources.

In 2004, URS/EG&G (2004a) conducted a comprehensive architectural survey and National Register-eligibility evaluation of WFF on behalf of NASA. The purpose of the historic resources survey was to identify, record, and evaluate the significance of architectural resources at the WFF in compliance with Section 110 of the NHPA. The study consisted of a reconnaissance-level architectural survey of 124 buildings, structures, and objects at WFF constructed prior to 1955, as well as a historic context. Of the 124 buildings and structures surveyed, 36 are major buildings and 88 are ancillary structures. The project included an historic context (concentrating on the period from 1936 to 1955) specific to extant structures built during this period by the U.S. Coast Guard, U.S. Navy, and NACA. The context focused on the development of the facility and its buildings and structures and their relation to the Space Race (1957–1969) and Cold War (1945–1989) eras. The study included evaluation of National Register and Virginia Landmarks Register eligibility for individual buildings and structures and for a potential historic district related to the context. As such, each surveyed resource was documented following VDHR standards and was evaluated according to the National Register criteria and standards for integrity. The survey recommended one historic resource (described below in Section 2.5.3) as eligible for the National Register. The remaining 122 surveyed resources were recommended not eligible for the National Register because they lack historic significance and/or integrity necessary to convey significance. Similarly, no National Register-eligible historic districts were found on the three

areas of the WFF. The Virginia SHPO concurred with these recommendations on November 4, 2004 (VDHR 2004a) (**Appendix E**).

A cultural resource survey for the proposed Uninhabited Aerial Systems Airstrip on WFF evaluated the eligibility of the 1952 Observation Mound (VDHR #001-0027-0125) located on the north end of Wallops Island (Espenshade and Lockerman 2009); additional documentation was completed the following year (NASA 2010). The mound was recommended not eligible for listing in the National Register. Although constructed as part of the Navy's Naval Air Ordnance Test Station, the mound itself does not meet National Register eligibility requirements and has sustained a loss of integrity of design, materials, workmanship, setting, association, and feeling. The Virginia SHPO concurred with WFF's determination that the mound is not eligible for the National Register (VDHR 2011d).

In 2011, TEC Inc. conducted a Section 110 architectural survey of buildings and structures built between 1956 and 1965. Each identified resource was evaluated based on its eligibility for listing on the National Register either individually or as a contributing resource to a historic district. The existing historic context for WFF was augmented for the 1956–1965 period. A total of 76 buildings and structures were identified as being constructed between 1956 and 1965 and were evaluated in this survey. Twenty-four (24) are located on Main Base, 18 on Wallops Mainland, and the remaining 34 are located on Wallops Island. All 76 buildings and structures were determined not eligible and no National Register-eligible historic districts were identified (TEC Inc. 2011). The Virginia SHPO concurred with these findings on June 22, 2011 (VDHR 2011b) (**Appendix E**).

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Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
<i>Wallops Main Base</i>						
A-001	001-0027-0001	Air Traffic Control Operations Building	Air Control Tower	1944	Determined Not Eligible	URS/EG&G 2004a
A-003	001-0027-0002	Taxiway Lighting and Switchgear Building	Electricity - Source (Miscellaneous)	1944	Determined Not Eligible	URS/EG&G 2004a
A-041	001-0027-0003	Runway AN/FPS-16 Radar Operations Building	Operations Buildings (Tracking Stations)	1947	Determined Not Eligible	URS/EG&G 2004a
A-131	001-0027-0006	Source Evaluation Board Building	Administrative Buildings (Miscellaneous)	1955	Determined Not Eligible	URS/EG&G 2004a
B-031	001-0027-0007	General Warehouse Storage Building	General Warehouse - Ready Issue	1944	Determined Not Eligible	URS/EG&G 2004a
B-129	001-0027-0008	Air Control Fire and Crash Building	Fire Station	1955	Determined Not Eligible	URS/EG&G 2004a
C-015	001-0027-0009	Air Control Support/Security Training Building	Aviation Operations Building	1946	Determined Not Eligible	URS/EG&G 2004a
C-094	001-0027-0010	Airfield Lighting Control Vault	Substation	1953	Determined Not Eligible	URS/EG&G 2004a
D-001	001-0027-0011	Aircraft Maintenance Hanger-Avionic	Aircraft Maintenance Hangar	1944	Determined Not Eligible	URS/EG&G 2004a
D-004	001-0027-0012	Water Pumping Station	Water Pump Facility, Potable	1944	Determined Not Eligible	URS/EG&G 2004a
D-008	001-0027-0013	Central Heating Plant	Utility Building	1944	Determined Not Eligible	URS/EG&G 2004a
D-010	001-0027-0014	Gymnasium/Special Operations Office Building	Gymnasium and Physical Conditioning Building	1945	Determined Not Eligible	URS/EG&G 2004a
D-012B	001-0027-0017	Sewage Treatment Plant Comminator	Sewage Treatment Plant	1944	Determined Not Eligible	URS/EG&G 2004a
D-095	001-0027-0023	Water Reservoir	Storage Tanks - Ground Level – Potable	1954	Determined Not Eligible	URS/EG&G 2004a
D-101	001-0027-0030	Balloon Research and Development Lab	Physical Science (Research and Development [R&D] & Test Buildings)	1954	Determined Not Eligible	URS/EG&G 2004a

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
D-103	001-0027-0032	Fuel Oil Storage Tank	Liquid Fuel Storage - Bulk (Miscellaneous)	1954	Determined Not Eligible	URS/EG&G 2004a
D-137	001-0027-0033	FMB Materials Storage Facility	Covered Storage (Miscellaneous)	1955	Determined Not Eligible	URS/EG&G 2004a
E-002	001-0027-0034	Cafeteria and Photo Lab	Photo Laboratory	1944	Determined Not Eligible	URS/EG&G 2004a
E-005	001-0027-0035	Contract Office and Storage Building	Covered Storage (Miscellaneous)	1944	Determined Not Eligible	URS/EG&G 2004a
E-007	001-0027-0036	Records Storage/Post Office/Mail and File	Administrative Buildings (Miscellaneous)	1945	Determined Not Eligible	URS/EG&G 2004a
E-104	001-0027-0037	Management Education Center	Administrative Buildings (Miscellaneous)	1954	Determined Not Eligible	URS/EG&G 2004a
E-105	001-0027-0038	Library/Fiscal/Procurement Building	Administrative Buildings (Miscellaneous)	1954	Determined Not Eligible	URS/EG&G 2004a
E-106	001-0027-0039	Control Center and Range Operations Building	Data Collection & Reduction Center Buildings (Launch Complex)	1954	Determined Not Eligible	URS/EG&G 2004a
E-107	001-0027-0040	Sound Rocket/Balloon Project Building	Data Collection & Reduction Center Buildings (Launch Complex)	1954	Determined Not Eligible	URS/EG&G 2004a
E-134	001-0027-0042	Mobile Radar Shop Office/Storage Building	Covered Storage (Miscellaneous)	1955	Determined Not Eligible	URS/EG&G 2004a
E-144	001-0027-0128	Ionosphere Sounding and Solar Data Center	Physical Science (Structures and Facilities)	1959	Determined Not Eligible	TEC Inc. 2011
F-001	001-0027-0043	Reproduction Facility Building	Printing and Reproduction Building	1946	Determined Not Eligible	URS/EG&G 2004a
F-002	001-0027-0044	Telecommunications Facility Building	Communications Building	1945	Determined Not Eligible	URS/EG&G 2004a
F-003	001-0027-0045	Conference and Morale Activities Building	Administrative Buildings (Miscellaneous)	1946	Determined Not Eligible	URS/EG&G 2004a
F-004	001-0027-0046	Dormitory	Community Facilities - Personnel Support and Service (Miscellaneous)	1946	Determined Not Eligible	URS/EG&G 2004a

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
F-005	001-0027-0047	Dormitory	Community Facilities - Personnel Support and Service (Miscellaneous)	1946	Determined Not Eligible	URS/EG&G 2004a
F-006	001-0027-0048	WFF Administration Building	Administration Buildings	1946	Determined Not Eligible	URS/EG&G 2004a
F-007	001-0027-0049	Multi-Payload Processing Facility	Assembly and Checkout Buildings (Launch Complex)	1946	Determined Not Eligible	URS/EG&G 2004a
F-010	001-0027-0051	Technical Service Shops and Offices	Metal Shop	1944	Determined Not Eligible	URS/EG&G 2004a
F-010A	001-0027-0052	Tool and Equipment Storehouse	General Warehouse - Ready Issue	1947	Determined Not Eligible	URS/EG&G 2004a
F-010B	001-0027-0053	Heat Treating Shop	Metal Shop	1950	Determined Not Eligible	URS/EG&G 2004a
F-015	001-0027-0054	Outdoor Tennis Court	Playing Court	1946	Determined Not Eligible	URS/EG&G 2004a
F-036	001-0027-0057	Wallops Employee Morale Association (WEMA) Storage Building	Community Facilities-Morale, Welfare & Recreational (Miscellaneous)	1952	Determined Not Eligible	URS/EG&G 2004a
F-044	001-0027-0058	Filter Storage Facility	Covered Storage (Miscellaneous)	1953	Determined Not Eligible	URS/EG&G 2004a
F-157	001-0027-0129	Office Furniture Supply Warehouse	General Warehouse - Ready Issue	1957	Determined Not Eligible	TEC Inc. 2011
F-160	001-0027-0130	Health/Quality Verification Lab/Environmental Building	Materials (R&D & Test Buildings)	1957	Determined Not Eligible	TEC Inc. 2011
F-163	001-0027-0131	Chemical Storage Building	Covered Storage (Miscellaneous)	1963	Determined Not Eligible	TEC Inc. 2011
F-170	001-0027-0132	Plant Operations and Maintenance Branch Storage Building	Covered Storage (Miscellaneous)	1957	Determined Not Eligible	TEC Inc. 2011
F-172	001-0027-0059	ACS Pressure Vessel Testing Magazine	Flammables Storehouse - Ready Issue	1955	Determined Not Eligible	URS/EG&G 2004a
H-030	001-0027-0084	Four Car Garage/WEMA	Land Vehicle Shop	1950	Determined Not Eligible	URS/EG&G 2004a
H-114	001-0027-0085	Water Pump House	Water Pump Facility, Potable	1954	Determined Not Eligible	URS/EG&G 2004a

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
J-017	001-0027-0086	Visitor Information Center Exhibit Display Area Building	Administrative Buildings (Miscellaneous)	1953	Determined Not Eligible	URS/EG&G 2004a
J-093	001-0027-0087	Visitor Information Center Concession Building	Administrative Buildings (Miscellaneous)	1953	Determined Not Eligible	URS/EG&G 2004a
M-001	001-0027-0088	Plant Operation and Maintenance Shops Support/Storage Building	Explosive Storage (Miscellaneous)	1945	Determined Not Eligible	URS/EG&G 2004a
M-009– M-012, M-014	001-0027-0093, -0094, -0095, -0096, -0097	Underground Magazine	Underground Storage - Ready Issue	1945	Determined Not Eligible	URS/EG&G 2004a
M-015	001-0027-0133	Rocket Inspection and Storage Shelter	Explosive Storage (Miscellaneous)	1963	Determined Not Eligible	TEC Inc. 2011
M-016	001-0027-0134	Rocket Storage and Inspection Shelter	Explosive Storage (Miscellaneous)	1963	Determined Not Eligible	TEC Inc. 2011
M-017	001-0027-0135	Heating Plant Building	Heating Plant and Other Related Facilities - Oil-Fired	1963	Determined Not Eligible	TEC Inc. 2011
M-025	001-0027-0136	Ready Issue Magazine	Inert Storehouse - Ready Issue	1957	Determined Not Eligible	TEC Inc. 2011
M-183	001-0027-0137	Ready Service Magazine	Small Arms and/or Pyrotechnics Magazine	1957	Determined Not Eligible	TEC Inc. 2011
M-184	001-0027-0138	Ready Issue Storage Magazine	Explosive Storage (Miscellaneous)	1958	Determined Not Eligible	TEC Inc. 2011
N-116	001-0027-0098	Inactive Equipment Storage Building	General Warehouse - Ready Issue	1954	Determined Not Eligible	URS/EG&G 2004a
N-133	001-0027-0139	Credit Union Admin Office Building	Administrative Buildings (Miscellaneous)	1956	Determined Not Eligible	TEC Inc. 2011
N-134	001-0027-0140	VA Commercial Space Flight Authority Office	Administrative Buildings (Miscellaneous)	1956	Determined Not Eligible	TEC Inc. 2011
N-159	001-0027-0141	Research Aircraft and Observation Science Lab	Aeronautical (R&D & Test Buildings)	1957	Determined Not Eligible	TEC Inc. 2011
N-159E	001-0027-0142	Airport Surveillance Radar 7 (ASR-7) Radar Antenna Tower	Communications (Structures)	1961	Determined Not Eligible	TEC Inc. 2011
N-161	001-0027-0099	Facilities Engineering/Range and Mission Management	Administrative Buildings (Miscellaneous)	1953	Determined Not Eligible	URS/EG&G 2004a

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
N-162	001-0027-0143	Telecommunications Facility Building	Operations Buildings (Tracking Stations)	1957	Determined Not Eligible	TEC Inc. 2011
N-162B	001-0027-0144	Frequency Monitoring Antenna Tower	Antenna - Tower Supported	1963	Determined Not Eligible	TEC Inc. 2011
N-163	001-0027-0145	Antenna Calibration Measurement Facility Building	Spacecraft and Vehicle R&D Test Buildings	1963	Determined Not Eligible	TEC Inc. 2011
N-164	001-0027-0146	High Frequency Receiver Antenna	Antenna - Tower Supported	1965	Determined Not Eligible	TEC Inc. 2011
N-166	001-0027-0147	Flammable Storehouse	Covered Storage (Miscellaneous)	1957	Determined Not Eligible	TEC Inc. 2011
N-167	001-0027-0148	X-Band Antenna Central Control Building	Operations Buildings (Tracking Stations)	1965	Determined Not Eligible	TEC Inc. 2011
N-174	001-0027-0149	Boresight and Calibration Tower	Communications (Structures)	1962	Determined Not Eligible	TEC Inc. 2011
N-218	001-0027-0150	Chemical Storage Building	Flammables Storehouse - Ready Issue	1957	Determined Not Eligible	TEC Inc. 2011
N-222	001-0027-0151	Surplus Utilization and Disposal Building	General Warehouse - Ready Issue	1957	Determined Not Eligible	TEC Inc. 2011
<i>Wallops Mainland</i>						
I-004	001-0027-0152	Wallops Island Causeway and Bridge	Vehicular Bridges (Other)	1960	Determined Not Eligible	TEC Inc. 2011
U-005	001-0027-0153	Mainland Terminal Building	Communications Building	1961	Determined Not Eligible	TEC Inc. 2011
U-020A	001-0027-0154	Radar Antenna Pedestal Tower B	Communications (Structures)	1959	Determined Not Eligible	TEC Inc. 2011
U-020B	001-0027-0155	Electric Power Control Building	Support Buildings - Mechanical (Tracking Stations)	1959	Determined Not Eligible	TEC Inc. 2011
U-025	001-0027-0156	Radar Operations Building	Operations Buildings (Tracking Stations)	1959	Determined Not Eligible	TEC Inc. 2011
U-025A	001-0027-0157	Radar Antenna Pedestal Tower A	Communications (Structures)	1959	Determined Not Eligible	TEC Inc. 2011
U-026	001-0027-0158	Projects Maintenance Shop	Operations Buildings (Tracking Stations)	1960	Determined Not Eligible	TEC Inc. 2011

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
U-027	001-0027-1059	Spare Parts Storage Building	Support Buildings - Mechanical (Tracking Stations)	1961	Determined Not Eligible	TEC Inc. 2011
U-030	001-0027-0160	Spandar Radar Operations Building	Operations Buildings (Tracking Stations)	1960	Determined Not Eligible	TEC Inc. 2011
U-030A	001-0027-0161	Spandar Radar Pedestal Tower	Communications (Structures)	1960	Determined Not Eligible	TEC Inc. 2011
U-040	001-0027-0162	Mobile Radar Laboratory	Tracking and Data Acquisition Buildings	1961	Determined Not Eligible	TEC Inc. 2011
U-055	001-0027-0163	Transmitter Building	Communications Building	1964	Determined Not Eligible	TEC Inc. 2011
U-055A	001-0027-0164	High Frequency Antenna Tower	Antenna - Tower Supported	1965	Determined Not Eligible	TEC Inc. 2011
U-060	001-0027-0165	Collimation Beacon and Tower	Communications (Structures)	1964	Determined Not Eligible	TEC Inc. 2011
U-064	001-0027-0166	Communications Antenna Support Tower	Communications (Structures)	1965	Determined Not Eligible	TEC Inc. 2011
U-070	001-0027-0167	AN/FPQ-6 Radar Building	Operations Buildings (Tracking Stations)	1964	Determined Not Eligible	TEC Inc. 2011
U-070A	001-0027-0168	AN/FPQ-6 Radar Antenna Pedestal Tower	Communications (Structures)	1964	Determined Not Eligible	TEC Inc. 2011
U-080	001-0027-0169	Atmospheric Physics Measurement Lab	Tracking and Data Acquisition Buildings	1965	Determined Not Eligible	TEC Inc. 2011
Wallops Island						
V-025	001-0027-0170	Inert Pay Assembly and Checkout Building	Assembly and Checkout Buildings (Launch Complex)	1957	Determined Not Eligible	TEC Inc. 2011
V-030	001-0027-0171	Ammunition Magazine	Underground Storage - Ready Issue	1958	Determined Not Eligible	TEC Inc. 2011
V-042	001-0027-0172	Ready Service Magazine	Solid Fuel Storage - Bulk (Miscellaneous)	1956	Determined Not Eligible	TEC Inc. 2011
V-045	001-0027-0173	Hypergolic Fueling Facility	Test Support Buildings (Vehicle Static Test)	1963	Determined Not Eligible	TEC Inc. 2011
V-050	001-0027-0174	Hypergolic Fueling Control Facility	Control Center (Vehicle Static Test)	1963	Determined Not Eligible	TEC Inc. 2011

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
V-050A	001-0027-0175	Utility Canopy - Dynamic Balance Facility	Test Support Buildings (Vehicle Static Test)	1963	Determined Not Eligible	TEC Inc. 2011
V-052	001-0027-0176	Ready Service Chemical Storage Magazine	Solid Fuel Storage - Bulk (Miscellaneous)	1956	Determined Not Eligible	TEC Inc. 2011
V-055	001-0027-0177	Vertical Dynamic and Static Balance Facility	Test Support Buildings (Vehicle Static Test)	1963	Determined Not Eligible	TEC Inc. 2011
V-065	001-0027-0100	WEMA Recreational Facility (former Wallops Beach Life Saving Station)	Recreation Building	1936	Eligible	URS/EG&G 2004a
V-070	001-0027-0101	Coast Guard Observation Tower	Communications (Structures)	1936	Eligible (Contributing to V-065)	URS/EG&G 2004a
V-080	001-0027-0178	Rocket Motor Ready Storage	Covered Storage (Miscellaneous)	1963	Determined Not Eligible	TEC Inc. 2011
V-090	001-0027-0102	Elevated Water Tank	Storage Tanks - Elevated - Potable	1954	Determined Not Eligible	URS/EG&G 2004a
W-010	001-0027-0179	Terminal Building Launch Area	Service Buildings (Launch Complex)	1960	Determined Not Eligible	TEC Inc. 2011
W-015	001-0027-0180	Assembly Shop #4	Assembly and Checkout Buildings (Launch Complex)	1957	Determined Not Eligible	TEC Inc. 2011
W-016	001-0027-0181	Ready Storage Cubicle	Solid Fuel Storage - Bulk (Miscellaneous)	1957	Determined Not Eligible	TEC Inc. 2011
W-020	001-0027-0182	Blockhouse #3	Blockhouses (Launch Complex)	1960	Determined Not Eligible	TEC Inc. 2011
W-035	001-0027-0183	Terminal Building Launch Area #4	Service Buildings (Launch Complex)	1960	Determined Not Eligible	TEC Inc. 2011
W-035B	001-0027-0104	Cable Terminal Building	Service Buildings (Launch Complex)	1955	Determined Not Eligible	URS/EG&G 2004a
W-040	001-0027-0184	Assembly Shop #5	Assembly and Checkout Buildings (Launch Complex)	1957	Determined Not Eligible	TEC Inc. 2011
W-050	001-0027-0185	Cable Terminal Building Launch Area	Service Buildings (Launch Complex)	1960	Determined Not Eligible	TEC Inc. 2011
W-051	001-0027-0186	Flammables Storehouse	Flammables Storehouse - Ready Issue	1956	Determined Not Eligible	TEC Inc. 2011

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
W-057	001-0027-0187	Microwave Rain Attenuation Tower	Antenna - Tower Supported	1961	Determined Not Eligible	TEC Inc. 2011
W-065	001-0027-0188	Assembly Shop #3	Assembly and Checkout Buildings (Launch Complex)	1963	Determined Not Eligible	TEC Inc. 2011
W-067	001-0027-0189	Ready Issue Explosives Storage Cubical	Explosive Storage (Miscellaneous)	1957	Determined Not Eligible	TEC Inc. 2011
X-005	001-0027-0105	Fire Department Support Building	Land Vehicle Shop	1955	Determined Not Eligible	URS/EG&G 2004a
X-005A	001-0027-0190	Pathfinding Radar Antenna Tower	Communications (Structures)	1966	Determined Not Eligible	TEC Inc. 2011
X-015	001-0027-0106	Payload Processing Facility and Fire Department	Assembly and Checkout Buildings (Launch Complex)	1950	Determined Not Eligible	URS/EG&G 2004a
X-030	001-0027-0107	Paint Shop	Public Works or Maintenance Shop	1955	Determined Not Eligible	URS/EG&G 2004a
X-035	001-0027-0108	Launch Service Shop and Storage Facility	Launch Vehicle Maintenance Facility	1947	Determined Not Eligible	URS/EG&G 2004a
X-055	001-0027-0109	Launch Support Service Building	Service Buildings (Launch Complex)	1946	Determined Not Eligible	URS/EG&G 2004a
X-065	001-0027-0110	Tower Camera Tracking Station #5	Camera Pads & Structures (Launch Complex)	1951	Determined Not Eligible	URS/EG&G 2004a
X-075	001-0027-0191	Island Terminal Building	Communications Building	1960	Determined Not Eligible	TEC Inc. 2011
X-085	001-0027-0192	Special Projects Building	Data Collection & Reduction Center Buildings (Launch Complex)	1963	Determined Not Eligible	TEC Inc. 2011
X-115	001-0027-0112	Plant Operations and Maintenance Branch Shop and Storage	Maintenance Shop (Installation Facilities)	1955	Determined Not Eligible	URS/EG&G 2004a
Y-010	001-0027-0193	Fuel Storage Magazine	Liquid Propellant Storage (Miscellaneous)	1957	Determined Not Eligible	TEC Inc. 2011
Y-015	001-0027-0113	Assembly Shop #1	Assembly and Checkout Buildings (Launch Complex)	1950	Determined Not Eligible	URS/EG&G 2004a
Y-016	001-0027-0194	Ready Service Magazine	Flammables Storehouse - Ready Issue	1957	Determined Not Eligible	TEC Inc. 2011

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number

WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
Y-020	001-0027-0195	Ready Issue Storage Magazine	Dehumidified Warehouse - Ready Issue	1957	Determined Not Eligible	TEC Inc. 2011
Y-025	001-0027-0114	Propellant Magazine	Solid Fuel Storage - Bulk (Miscellaneous)	1950	Determined Not Eligible	URS/EG&G 2004a
Y-030	001-0027-0115	Blockhouse #2	Blockhouses (Launch Complex)	1950	Determined Not Eligible	URS/EG&G 2004a
Y-035	001-0027-0116	Launch Area 2 (Pads A, B, C)	Launch Pad (Launch Complex)	1950	Determined Not Eligible	URS/EG&G 2004a
Y-038	001-0027-0197	Launcher Equipment Shelter	Service Buildings (Launch Complex)	1965	Determined Not Eligible	TEC Inc. 2011
Y-040	001-0027-0117	Igniter and Rocket Motor Facility	Test Support Buildings (Vehicle Static Test)	1952	Determined Not Eligible	URS/EG&G 2004a
Y-045	001-0027-0118	Igniter Magazine	Solid Fuel Storage - Bulk (Miscellaneous)	1950	Determined Not Eligible	URS/EG&G 2004a
Y-050	001-0027-0119	Rocket Flight Hardware Storage Facility	Covered Storage (Miscellaneous)	1950	Determined Not Eligible	URS/EG&G 2004a
Y-055	001-0027-0198	AN-FPS-16 Radar Station	Operations Buildings (Tracking Stations)	1958	Determined Not Eligible	TEC Inc. 2011
Y-060	001-0027-0120	Island Radar Control Building	Operations Buildings (Tracking Stations)	1955	Determined Not Eligible	URS/EG&G 2004a
Y-075	001-0027-0121	Outdoor Electrical Substation	Substation	1952	Determined Not Eligible	URS/EG&G 2004a
Y-095	001-0027-0199	Camera Platform with 12ft AS	Camera Pads & Structures (Launch Complex)	1964	Determined Not Eligible	TEC Inc. 2011
Y-110	001-0027-0200	Camera Platform with 10ft Astrodome	Camera Pads & Structures (Launch Complex)	1964	Determined Not Eligible	TEC Inc. 2011
Z-020	001-0027-0126	Liquid Propellant Storage	Liquid Propellant Storage	1961	Determined Not Eligible	TEC Inc. 2011
Z-025	001-0027-0127	Liquid Propellant Storage	Liquid Propellant Storage	1961	Determined Not Eligible	TEC Inc. 2011
Z-035	001-0027-0122	Tracking Camera Tower with Dome	Camera Pads & Structures (Launch Complex)	1951	Determined Not Eligible	URS/EG&G 2004a
Z-040	001-0027-0201	Launch Area 0 Service Building	Service Buildings (Launch Complex)	1960	Determined Not Eligible	TEC Inc. 2011

Table 2-4. Evaluated Extant Architectural Resources on Wallops Flight Facility Arranged by Property ID Number						
WFF Property ID Number	VDHR Number	Property Name	Description	Year Constructed	NRHP Eligibility	Recorded by and Year
Z-065	001-0027-0123	Blockhouse #1	Blockhouses (Launch Complex)	1952	Determined Not Eligible	URS/EG&G 2004a
Z-070	001-0027-0124	Launch Area #1 (Apron)	Launch Pad (Launch Complex)	1952	Determined Not Eligible	URS/EG&G 2004a
No ID number	001-0027-0125	Observation Mound	Support Structure	1952	Determined Not Eligible	Espenshade and Lockerman 2009

2.5.3 WFF’s Historic Properties

The 2004 *Historic Resources Survey and Eligibility Report* (URS/EG&G 2004a) determined that one resource, consisting of the Wallops Beach Life Saving Station (VDHR #001-0027-0100; WFF# V-065) and its associated contributing Observation Tower (VDHR #001-0027-0101; WFF# V-070) is eligible for listing in the National Register and Virginia Landmarks Register (**Figure 2-5; Table 2-5; Appendix F**). The tower is not significant individually, but as a contributing structure to the Life Saving Station. The station is eligible for local historical significance for its association with the Coast Guard, which had a vital role in protecting shipping and human lives along Virginia’s Eastern Shore, and for local architectural significance for exemplifying the Colonial Revival style.

The 2009 archaeological survey for the proposed Uninhabited Aerial Systems Airstrip on Wallops Island recommended the Revolutionary War Military Earthworks (44AC0089), located on Wallops Island, as eligible for listing in the National Register (**Figure 2-4; Table 2-5**). The site was recommended eligible for local significance as a rare extant engineering example of a small, vernacular Revolutionary War field fortification and for its potential to contribute information regarding the supply, foodways, and fort structure, design, and construction of small Revolutionary War fortifications. The undertaking was subsequently redesigned to avoid adverse effects to this site. Consequently, a formal determination of eligibility has not been conducted in consultation with the Virginia SHPO. However, per the terms of the PA, the HPO will treat the site as a historic property.

Table 2-5. Known National Register-Eligible Cultural Resources Located on WFF				
VDHR Site Number	WFF Number	Name/Type	Culture Period	National Register Status
44AC0089	Not applicable	Military Earthworks	Revolutionary War	Eligible (per the terms of the PA)
001-0027-0100	V-065	Wallops Beach Life Saving Station	1936–1947	Eligible
001-0027-0101	V-070	Observation Tower	1936–1947	Eligible as a Contributing Structure to the Life Saving Station

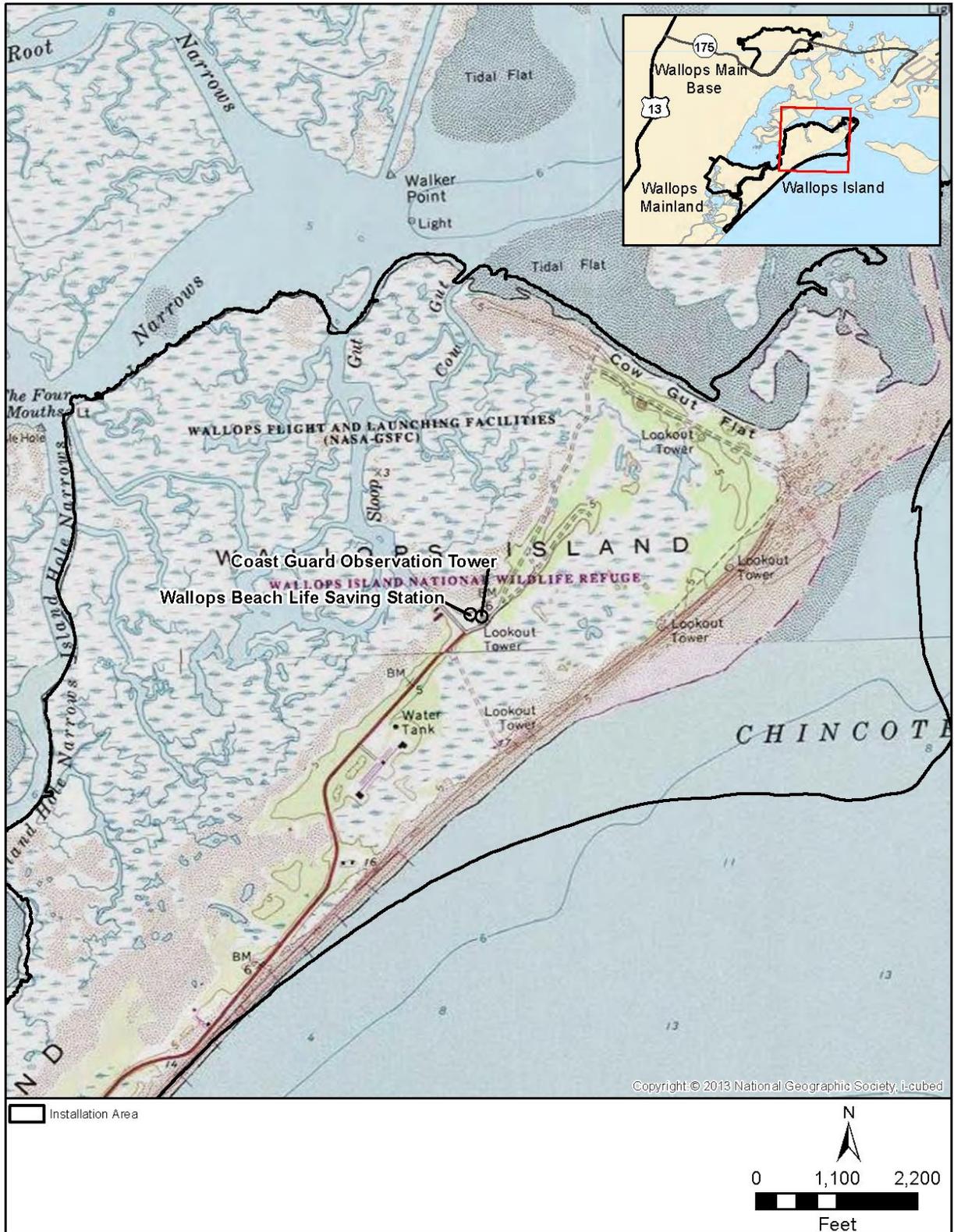


Figure 2-5. Location of Wallops Beach Life Saving Station (VDHR #001-0027-0100) and Associated Observation Tower (VDHR #001-0027-0101)

3.0 CULTURAL RESOURCE PLANNING

3.1 INTRODUCTION

Effective cultural resources management requires project and program managers and planners to understand the regulatory framework guiding their actions. It is also helpful for the unique archaeological and architectural resources located at the site to be placed into a system of classification to guide the planning and management activities that will affect those resources. While it is not always possible to save and maintain every historic property because of mission requirements, national security, and/or cost, it is useful to have a plan in place for mitigating the impact when it is necessary to make decisions that potentially impact the qualities that make the resources eligible for listing in the National Register. At the time of this management plan's development there were only two historic properties identified at WFF: Wallops Beach Life Saving Station (VDHR #001-0027-0100) along with the associated Observation Tower (VDHR #001-0027-0101), and, per the terms of the PA, the Military Earthworks (44AC0089). Additional historic properties (archaeological or architectural) may be identified during the five-year duration of this ICRMP, making a discussion of these regulations all the more pertinent. New historic properties may be identified through the Section 106 process, through Section 110 evaluations, or through re-evaluation of previously surveyed properties. New eligible buildings and structures would result from additional resources reaching 45 years of age or older (in anticipation of their turning 50). New eligible archaeological sites could be identified by future project-driven archaeological survey under Section 106 of the NHPA.

Section 3.2 provides a review of applicable cultural resources management legislation, regulations, executive orders, and standards that define the statutory basis for protecting and maintaining any future historic and archaeological resources at WFF. Section 3.3 describes the existing WFF organizational framework for cultural resources management. Types of undertakings that may affect historic properties and treatment procedures to guide future management activities at WFF are recommended in Sections 3.4 and 3.5. Sections 3.6 and 3.7 provide planning and mitigation strategies for cultural resources management over the next five years.

3.2 APPLICABLE LEGISLATION, STANDARDS, EXECUTIVE ORDERS, AND REGULATIONS

Federal legislation provides the statutory basis for identifying, evaluating, and protecting historic properties managed by Federal agencies and delineates agency responsibilities during the planning and review stages of Federal actions. These laws and their implementing regulations define the responsibilities of NASA to protect the cultural resources of WFF, while ensuring that the interests of the nation are served in identifying and protecting cultural resources located on public lands. NASA Policy Directives (NPDs) and NASA Procedural Requirements (NPRs) clarify NASA policy for management of cultural resources. These directives and procedures are based of federal laws and policies and integrate them with NASA missions.

The following discussion provides an overview of Federal statutes and regulations that are applicable to the management of cultural resources at WFF. More detailed information regarding Federal legislation is located in **Appendix G**. In addition, the National Park Service (NPS) maintains a webpage with pdf versions of cultural resource laws, regulations, and executive orders. These can be downloaded at: <http://www.nps.gov/history/laws.htm>.

3.2.1 Federal Laws and Regulations

3.2.1.1 American Antiquities Act

The American Antiquities Act of 1906, as amended (16 U.S.C. §§ 431–433), protects all historic and prehistoric sites on Federal lands and prohibits excavation or destruction of such antiquities without the permission of the Secretary of the department with jurisdiction over those lands.

3.2.1.2 American Indian Religious Freedom Act

The American Indian Religious Freedom Act (AIRFA) of 1978, as amended (42 U.S.C. §§ 1996 et seq.), establishes U.S. policy to protect and preserve American Indian, Eskimo, Aleut, and Native Hawaiian freedom to believe, express, and exercise traditional religions and ways. This includes access to sacred sites, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rites. Federal agencies must determine whether changes to their policies and procedures are needed to protect such rights and freedoms.

3.2.1.3 Archeological and Historic Preservation Act

The Archeological and Historic Preservation Act of 1974, as amended (16 U.S.C. §§ 469–469c-2), requires Federal agencies to arrange for the “preservation of historical and archaeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of...any Federal construction project or Federally licensed activity or program.”

3.2.1.4 Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA) of 1979, as amended (16 U.S.C. §§ 470aa et seq.), establishes that excavating, removing, damaging, altering, or defacing archaeological resources located on public or Indian lands unless authorized by a permit, or selling, purchasing, or transferring artifacts obtained in violation of the law is a felony. ARPA requires Federal land-managing agencies to issue a permit prior to the initiation of archaeological investigations on Federal property or property under Federal control. ARPA permits are triggered by the excavation or removal of “any archaeological resource located on public lands or Indian lands,” as well as “activities associated with such removal” (16 U.S.C. § 470cc[a]).

3.2.1.5 Historic Sites Act

The Historic Sites Act of 1935, as amended (16 U.S.C. §§ 461–467), makes it a national policy “to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.” The act also authorizes the NPS to carry on a continuing program of recording, documenting, acquiring, and managing places important in the interpretation and commemoration of the history of the United States.

3.2.1.6 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§ 4321–4370h) requires Federal agencies to consider the effects of their proposed actions on the human and natural environment prior to initiation and to involve the public in the decision-making process. NASA’s procedures and responsibilities for complying with NEPA and the Council on Environmental Quality’s implementing regulations are set forth in NPR 8580.1 (effective August 1, 2012; expiration August 1, 2017).

Although NEPA compliance documents must contain an assessment of the impacts of a proposed action or activity on both natural and cultural resources, compliance with NEPA cannot itself substitute for Section 106 consultation. However, the fulfillment of Section 106 of the NHPA can be coordinated with the NEPA process, or NEPA reviews may be substituted for the Section 106 process. Integrating the Section 106 and NEPA compliance procedures, whether through coordination or substitution, involves beginning both the NEPA and Section 106 reviews early in project planning, and is most effective when both processes are initiated simultaneously.

Coordination of Section 106 compliance and NEPA, as addressed in 36 CFR § 800.8(a), synchronizes Section 106 and NEPA reviews. Each level of NEPA review, i.e., a Categorical Exclusion, Environmental Assessment (EA), or Environmental Impact Statement (EIS), may be coordinated with Section 106. Opportunities for coordination include, but are not limited to:

- Identifying and evaluating cultural resources and determining if a project has a potential effect on them while preparing the NEPA document;
- Developing a communication plan to meet public involvement requirements for both NEPA and Section 106 at the beginning of project review;
- Including information from Section 106 documents in the NEPA document; and
- Referencing any treatment or mitigation measures developed through the Section 106 process in the NEPA document.

Substitution, as outlined under 36 CFR § 800.8(c), allows agencies to use the NEPA review procedures and documentation as an alternative to the standard four-step Section 106 review process set out in 36 CFR §§ 800.3–800.6. Substitution is appropriate for actions requiring preparation of an EA and Finding of No Significant Impact (FONSI) or an EIS and Record of Decision (ROD), but not a Categorical Exclusion. Advance planning is necessary to implement the substitution process in order to ensure the NEPA review meets the standards of the four-step Section 106 review. The substitution process involves:

- Notifying the ACHP and the SHPO of the intent to use the process and documentation for preparing an EA/FONSI or EIS/ROD to comply with Section 106 in lieu of the procedures in 36 CFR §§ 800.3–800.6;
- Identifying consulting parties during NEPA scoping;
- Identifying historic properties in the APE while developing the alternatives for the EA or EIS;
- Using the draft EA or EIS as the basis for consulting on the effects of the project with the SHPO and consulting parties;
- Consulting on alternatives or measures that avoid, minimize, or mitigation adverse effects; and
- Including the results of consultation, a Memorandum of Agreement (MOA) or Programmatic Agreement, or ACHP comments in the final EA/FONSI or EIS/ROD.

A Federal agency cannot sign a NEPA decision document (a FONSI or ROD) prior to the completion of the Section 106 process. In the event that the undertaking is modified subsequent to the approval of the

EIS or EA, the ACHP will be notified that supplemental environmental documents or procedures outlined in 36 CFR §§ 800.3 through 800.6 will be prepared.

The Council on Environmental Quality's and ACHP's (2013) *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106* provides guidance for implementing the regulatory provisions of coordination and substitution of a NEPA process for Section 106. The handbook may be downloaded from: <https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/handbooks>.

3.2.1.7 National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. § 300101 et seq.), is the cornerstone of Federal cultural resources management law. The NHPA established a national program of historic preservation and requires Federal agencies to consider the effect of their proposed activities on historic properties. Additionally, the NHPA:

- Created the National Register of Historic Places, which lists “districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture,” and authorized the Secretary of the Interior to maintain, expand, and establish nominating procedures for the National Register (54 U.S.C. §302101 and §302103);
- Instituted a system of State Historic Preservation Offices (SHPO) for all states and territories to administer each state’s historic preservation program (54 U.S.C. § 302303);
- Established the Section 106 review process, which mandates that any undertaking involving Federal funds or financial assistance (including federal grants) must “take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register” (54 U.S.C. § 306108); and
- Established the Advisory Council on Historic Preservation as an independent agency to advise the President, Congress, and other Federal agencies on historic preservation matters; disseminate information on historic preservation; and encourage public interest in historic preservation (54 U.S.C. §§ 304102).

Sections 106 and 110 are the two primary elements of the NHPA related to Federal management of historic properties. Section 110 of the NHPA defines the broad historic preservation responsibilities of Federal agencies and is intended to ensure that historic preservation is fully integrated into the ongoing programs of all Federal agencies. Under the law, the heads of Federal agencies must do several things. First, they must assume responsibility for the preservation of historic properties owned or controlled by the agency. Each Federal agency must also establish a preservation program for the identification, evaluation, nomination, and protection of historic properties. Additionally, Federal agencies must consult with the Secretary of the Interior (acting through the Director of the NPS) in establishing their individual preservation programs. Each Federal agency must, to the maximum extent feasible, use available historic resources to carry out its responsibilities.

Section 106 requires Federal agencies to take into account the effects of their proposed projects and activities on historic properties. 36 CFR Part 800, Protection of Historic Properties, contains the implementing regulations of Section 106. These regulations outline the process for complying with Section 106, and define the roles of the SHPO, ACHP, Tribal Historic Preservation Offices, and other

concerned parties in this process. Section 106 review ensures that Federal agencies consider historic properties in the early stages of planning proposed undertakings, along with other factors such as environmental concerns, cost, design, and agency mission. Proposed projects classified as undertakings under Section 106 may not be located entirely on Federally owned or controlled lands.

The Federal agency responsible for the proposed undertaking must initiate and complete the Section 106 review process. First, all known and potential cultural resources must be identified and evaluated for their eligibility using the National Register Criteria for Evaluation (36 CFR § 60.4[a-d]). Then the potential effects, both direct and indirect, on significant identified resources must be determined. If it is found that a proposed project would have an effect on an historic property, steps must be taken to mitigate the anticipated effect. The review process includes consultation with the SHPO, appropriate Native American tribes, other identified concerned parties, and if necessary, the ACHP. All consulted parties must be afforded a reasonable opportunity to comment.

3.2.1.8 Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, as amended (25 U.S.C. § 3001 et seq.), governs the repatriation and protection of Native American (American Indian, Inuit, and Hawaiian Native) human remains, associated and unassociated funerary objects, sacred objects, and objects of cultural patrimony recovered from lands controlled or owned by the United States or held in the collections of Federal agencies or Federally funded museums. The NAGPRA implementing regulations (43 CFR Part 10) outline the process for determining the rights of lineal descendants and Indian tribes and Native Hawaiian organizations to certain Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony with which they are affiliated.

Under NAGPRA, only Federally recognized Native American tribes and Native Hawaiian organizations may claim cultural items. The NAGPRA Review Committee has recognized that there are some instances in which non-Federally recognized tribes may be appropriate claimants for cultural items. Although currently there are no Federally recognized tribes located in Virginia, there are 11 tribal groups officially recognized by the Commonwealth of Virginia. In the event of an unanticipated discovery of human remains or cultural items at WFF, NASA may consult with non-Federally recognized tribes to repatriate the cultural items.

3.2.1.9 Curation of Federally Owned and Administered Archaeological Collections

These regulations (36 CFR Part 79) establish the definitions, standards, procedures, and guidelines to be followed by Federal agencies in preserving collections of prehistoric and historic material remains and associated records recovered under the authority of the American Antiquities Act, the Reservoir Salvage Act (16 U.S.C. §§ 469–469c), chapter 3061 of the NHPA, or ARPA. However, as noted above, the requirements of NAGPRA and 43 CFR Part 10 applies to the disposition of Native American human remains and cultural items, as defined by NAGPRA, in the possession and control of a Federal agency.

3.2.2 Executive Orders and Memoranda

3.2.2.1 Executive Order 11593 – Protection and Enhancement of the Cultural Environment

Executive Order (EO) 11593, issued on May 13, 1971, requires agencies of the executive branch of the Federal government to do the following: administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; initiate measures necessary to direct their policies,

plans, and programs in such a way that Federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people; and, in consultation with the ACHP, institute procedures to ensure that Federal plans and programs contribute to the preservation and enhancement of non-Federally owned sites, structures, and objects of historical, architectural, or archaeological significance.

3.2.2.2 Executive Order 13007 – Indian Sacred Sites

EO 13007, dated May 24, 1996, requires Federal agencies to allow access to and ceremonial use of sacred Indian sites located on Federal lands by Indian religious practitioners of federally recognized tribes. In addition, Federal agencies will provide reasonable notice of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

3.2.2.3 Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments

Issued on November 6, 2000, EO 13175 clarifies the legal relationship between the Federal government and Indian tribal governments and reiterates the sovereignty of tribal governments. In addition, Federal agencies must establish a consultation process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.

3.2.2.4 Executive Order 13287 – Preserve America

Signed on March 3, 2003, EO 13287, Preserve America, requires Federal agencies to advance the protection, enhancement, and contemporary use of historic resources under their ownership or management. As part of the order, the ACHP provided recommendations on strategies and techniques to stimulate initiative, creativity, and efficiency in the stewardship of Federally owned historic resources. Additionally, Federal agencies are encouraged to develop partnerships with other governmental bodies and agencies, at the State, tribal, and local levels, and with the private sector, in order to promote preservation and heritage tourism as a means of economic development.

3.2.2.5 Presidential Memorandum – Tribal Consultation

The Presidential Memorandum on Tribal Consultation was issued on November 5, 2009, directing each Federal agency to develop a detailed plan of action for implementing the policies and directives of EO 13175, Consultation and Coordination with Indian Tribal Governments. The Presidential Memorandum requires Federal agencies to formalize a process for consulting with tribal governments and considering tribal interests in carrying out their policies and programs.

3.2.3 Historic Preservation Standards and Guidelines

3.2.3.1 The Secretary of the Interior’s Standards for the Treatment of Historic Properties

The *Secretary of the Interior’s Standards for the Treatment of Historic Properties* (36 CFR Part 68) provide guidelines for the treatment of historic properties and include standards for preservation, rehabilitation, restoration, and reconstruction projects. These standards are found in **Appendix H**.

3.2.3.2 The Secretary of the Interior’s Professional Qualification Standards

The Secretary of the Interior’s Professional Qualification Standards (48 Federal Register Part 44716) provides guidelines that define the minimum education and experience required to perform identification,

evaluation, registration, and treatment activities in the fields of History, Archaeology, Architectural History, Architecture, and Historic Preservation. In some cases, additional areas or levels of expertise may be necessary, depending on the complexity of the task and the nature of the historic properties involved. Federal agencies use these standards to guide hiring of their own cultural resources management professionals, and those retained on a contractual basis. These standards are found in **Appendix H**.

3.2.4 NASA Policy Directives and Procedural Requirements

3.2.4.1 NPR 4310.1A – Artifact Identification and Disposition

This NPR (effective May 12, 2014; expiration May 12, 2019) outlines the process for identifying, reporting, and transferring NASA artifacts, which are defined as “items of personal property that represent important aspects related to the history of aeronautics and astronautics.” Examples of aeronautical and astronautical artifacts include items such as space launch vehicles, spacecraft, rocket engines, training devices, simulators, personal equipment, instruments, operating handbooks, drawings, photographs, film, audio and video tapes, and memorabilia. This NPR stipulates that “Prior to removal or excessing of historically significant elements/equipment (i.e., artifacts) that could alter or change the character of the historic property that contributes to its historic significance, the Center’s HPOs shall comply with the Advisory Council on Historic Preservation’s implementing regulations, 36 CFR Part 800, Protection of Historic Properties.”

3.2.4.2 NPD 8500.1C – NASA Environmental Management

NPD 8500.1C (effective December 2, 2013; expiration December 2, 2018) sets forth NASA’s policies for environmental management, planning, and responsibilities. The NPD includes cultural resources as a component of NASA’s environmental management program, which “supports NASA’s missions, protects mission resources, and mitigates environmentally driven mission risks, while maintaining environmental stewardship of assets, controls over environmental responsibilities, and compliance with applicable legal and other requirements.”

3.2.4.3 NPR 8510.1 – NASA Cultural Resources Management

This NPR (effective June 20, 2012; expiration June 20, 2017) establishes the requirements of NASA’s cultural resources management program under NPD 8500.1C and in accordance with applicable legal and other requirements, and outlines the purpose and scope of the ICRMP and its contents. In recognition of NASA’s role in cultural resources stewardship, this NPR establishes practices and procedures that will “ensure preservation of [significant cultural resources] to NASA’s mission, communities, and the history of our Nation.” NPR 8510.1 is included in **Appendix A**.

3.2.4.4 NPR 8553.1B – NASA Environmental Management System

NPR 8553.1B (effective September 22, 2009; expiration September 22, 2019) provides guidance on developing, implementing and maintaining NASA’s Environmental Management System. The Environmental Management System provides a standard process and quantifiable framework for identifying environmental aspects and impacts and determining high-priority environmental aspects associated with activities, products, and services of each NASA Center and Component Facility. Cultural resources comprise one of the categories of environmental aspects that are included in the Environmental Management System.

3.2.5 Programmatic Agreement (PA)

A PA establishes alternate procedures for consultation, review, and compliance with federal laws and regulations on historic preservation and the protection of historic properties that differs from the standard Section 106 process. According to 36 CFR § 800.14(b), the ACHP and the agency official may negotiate a PA to govern the implementation of a particular program or the resolution of adverse effects from certain complex project situations or multiple undertakings. Typically PAs are multi-year agreements.

NASA WFF has a PA in place regarding the Section 106 process that addresses the planning and treatment of historic properties at WFF. The PA is included in **Appendix B**. Management procedures established by this PA are identified in Section 4.0.

3.2.5.1 Programmatic Agreement Regarding the Management of Facilities, Infrastructure, and Sites at Wallops Flight Facility

This PA among NASA, Virginia SHPO, and the ACHP regarding the planning, treatment, and management of historic properties at WFF was executed on December 17, 2014. The PA outlines specific procedures to be followed with regard to the management of cultural resources on WFF, including roles and responsibilities, activities not requiring review under the scope of the PA, a standard review process for Section 106 compliance, planning for the Wallops Beach Life Saving Station (VDHR #001-0027-0100), public benefit and education, archaeology, resolution of adverse effects, emergency actions, preparation and review of documents, curation, post review discoveries, human remains, dispute resolution, and the handling of sensitive but unclassified data. The procedures and requirements outlined in the PA are based on a comprehensive history of WFF's cultural resource surveys, inventories, plans, and management measures, taking into account known and potential cultural resources, as well as anticipated needs in terms of management review and actions. The PA further establishes consulting parties and consultation requirements with regard to the management of cultural resources at WFF; these consulting parties include the Virginia SHPO, the ACHP, the Catawba Indian Nation, and the Pocomoke Indian Nation.

The PA is in effect for five years after the date of execution (December 17, 2014), and will automatically renew for another five years unless NASA, the Virginia SHPO, or the ACHP provides a written objection to its renewal within 60 calendar days prior to the date it would otherwise expire. In the ninth year of the PA, NASA, the Virginia SHPO, or the ACHP may consult and agree to an extension of the PA. An extension would involve executing a written modification for an agreed upon period.

3.3 FRAMEWORK FOR CULTURAL RESOURCES MANAGEMENT AT WFF

3.3.1 Facility Historic Preservation Officer

WFF's HPO, which is within the Facilities Management Branch, manages the cultural resources program at Wallops Flight Facility.

The HPO job includes coordinating WFF's cultural resources responsibilities with programs and tenant organizations at WFF. These duties are included in NPR 8510.1, which describe requirements, roles, and responsibilities for management and protection of cultural resources at NASA facilities, including WFF. The NPR is applicable to all personnel, facilities, and activities, including tenants, contractors, grantees, clubs, and other parties operating under the auspices of WFF. The NPR is included as **Appendix A**. It is

critical that WFF use the ICRMP in an ongoing and coordinated way to ensure that both short- and long-term facility-planning activities take into account cultural resources protection.

According to NPR 8510.1, the HPO has numerous responsibilities for establishing and maintaining NASA CRM Program requirements at WFF. Those requirements generally correspond to one of the following categories of management actions:

- Integrating cultural resources management goals and procedures into other components of WFF's administrative and planning structure;
- Overseeing compliance with NHPA, ARPA, NAGPRA, and all other relevant Federal laws and regulations;
- Ensuring that NASA cultural resource responsibilities are understood and carried out;
- Maintaining a current inventory of cultural resources;
- Coordinating communication and fostering relationships between WFF and outside agencies, Native American tribes, and the public who have an interest in cultural resources at WFF; and
- Ensuring that projects involving historic properties follow as closely as practical the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

As WFF develops its cultural resources program, the HPO must take part in ongoing cultural resources management training in order to perform the job with the necessary knowledge and confidence to serve as the primary point of contact for historic preservation at WFF. Section 3.6.5 of this ICRMP makes several recommendations for such training.

3.3.2 The Role of External Agencies in WFF Cultural Resources Management

3.3.2.1 Advisory Council on Historic Preservation (ACHP)

The ACHP is an independent Federal agency that provides a forum for influencing Federal activities, programs, and policies as they affect historic resources. The goal of the NHPA, which established the ACHP in 1966, is for Federal agencies to act as responsible stewards of cultural resources when their actions affect historic properties. The ACHP is the only entity with the legal responsibility to balance historic preservation concerns with Federal project requirements.

As directed by the NHPA, the ACHP:

- Advocates full consideration of historic values in Federal decision making;
- Reviews Federal programs and policies to promote effectiveness, coordination, and consistency with national preservation policies; and
- Recommends administrative and legislative improvements for protecting our nation's heritage with due recognition of other national needs and priorities.

The ACHP may participate in resolving adverse effects to historic properties, comment on proposals, or the review of MOAs or PAs under Section 106. The ACHP typically is not involved in Section 106 review of individual cases; however, it may elect to enter into an individual Section 106 review when an undertaking has substantial impacts on important historic properties; presents important questions or

policy or interpretation; has the potential for presenting procedural problems; or presents issues of concern to Indian tribes or Native Hawaiian organizations (36 CFR Part 800, Appendix A).

3.3.2.2 Virginia State Historic Preservation Officer (SHPO)

The Virginia SHPO is responsible for administering cultural resources programs within the Commonwealth of Virginia. The Virginia Department of Historic Resources (VDHR) is the Commonwealth of Virginia's designated historic preservation agency, and is the staff office of the Virginia SHPO. The mission of the department is to "foster, encourage, and support the stewardship of Virginia's significant historic architectural, archaeological, and cultural resources" (VDHR 2014). The department staff administers all official Federal and State historic preservation activities in Virginia. In addition to its specific programs, the VDHR maintains a research center with both paper and electronic archives for its inventory of more than 137,000 historic properties (including more than 32,000 archaeological sites), and a library that is open to the public. The VDHR curates more than five million objects in the Commonwealth's archaeological collections and makes these collections available to researchers and to the public through loans to museums across the state.

Most of the direct services of the VDHR are delivered to communities through its three regional offices. These regional centers provide the first point of contact for agency programs, and can also provide information about regional and local preservation organizations.

The Virginia SHPO participates in Section 106 review initially by concurring or not concurring in WFF's identification of historic properties affected by its projects and its determination of whether a specific project will, or will not, have an effect on historic properties. Under Section 106, the Virginia SHPO has the ability to enter into an MOA or PA with WFF regarding the treatment of historic properties.

3.3.2.3 Catawba Indian Nation and Pocomoke Indian Nation

There are no Federally recognized tribes in Virginia. Nonetheless, the Catawba Indian Nation and the Pocomoke Indian Nation were identified as consulting parties in conjunction with the development of the PA. As identified in the PA, the Catawba Indian Nation and the Pocomoke Indian Nation participate in the Section 106 review process and the resolution of adverse effects, review and comment on draft and final technical reports, and participate in consultation in the event of a post-review discovery.

3.4 PROPOSED PROJECTS AND SECTION 106 COMPLIANCE

WFF undertakes a variety of projects (classified as "undertakings" in the Section 106 process) in support of its mission, including launches, maintenance, repair, and construction projects. Some undertakings may affect historic or archaeological resources that are potentially eligible or eligible for listing in the National Register. Depending upon the location and kind of undertaking, undertakings can affect properties outside WFF boundaries. Activities that include ground disturbance in the vicinity of archaeological resources, extensive building modifications or rehabilitation, and/or new construction may directly or indirectly affect cultural resources. Careful planning, early coordination, and communication within the Section 106 consultation process will streamline the review and consultation process. Section 4.2 provides a standard operating procedure for the Section 106 consultation process at WFF, which includes following the provisions of Stipulation IV, Standard Review Process, of the PA for Section 106 review consultation of undertakings at WFF that may affect historic properties.

Some projects, including general maintenance and repair, may be determined to have “no effect” to historic properties (an “effect” results in changes to the characteristics of the historic property that qualify it for inclusion in or eligibility for the National Register [36 CFR § 800.16(i)]). Refer to Appendix G of the PA for a list of activities that have been identified in consultation with the Virginia SHPO and ACHP as having limited potential to affect historic properties and, therefore, do not require Section 106 review.

3.4.1 Examples of Undertakings Subject to NHPA

An undertaking is defined as “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval” (36 CFR § 800.16[y]). The term encompasses a broad range of activities, including demolition, construction, repair, and maintenance. In general, when WFF carries out an undertaking that may affect historic properties, the HPO must conduct a review and consultation under Section 106.

Building Maintenance/Minor Repair

Maintenance tasks typically include routine and minor repairs (i.e., roof repairs, painting, equipment maintenance, upgrades, or electrical repairs). Building maintenance generally does not have an adverse effect on eligible or listed properties. If neglect of a historic property leads to deterioration or destroys the historic features that qualify it for the National Register, it is considered an adverse effect. Generally, maintenance and minor repair work on the interior of the building will have no effect on archaeological resources. However, grounds maintenance, utility installation, or replacement activities that involve disturbing or excavating soils around the perimeter of a building may affect archaeological resources in the vicinity.

Building Modification

Building modification projects include rehabilitations, major repairs, accessibility improvements, and additions. These types of projects generally include replacement of materials, and/or construction. Although building modification projects will have an effect on historic buildings, the effect is not always adverse. All work on buildings and structures eligible for or listed in the National Register should be completed according to *the Secretary of the Interior’s Standards for the Treatment of Historic Properties*. Otherwise, the SHPO may find that the project has an adverse effect during the Section 106 consultation process. Similarly, accessibility projects must seek to balance increased accessibility with preservation of historic building materials and features. For more information refer to NPS Preservation Brief 32, *Making Historic Properties Accessible* (Jester and Park 1993). Modification projects confined to a building’s interior generally do not have an impact on archaeological resources. However, modification projects that involve excavation or ground disturbing activities (i.e., enlarging the building footprint, excavating basements, or installing drainage systems) have the potential to affect adjacent archaeological resources.

New Construction

New construction generally includes extensive subsurface disturbance and landscape modification. As a result, these projects may adversely affect unidentified archaeological resources. Construction of a new building may also introduce visual, audible, or atmospheric elements out of character with a property or alter its historic setting and in so doing impact surrounding historic resources. Since the potential for adverse effects may extend to historic properties outside of WFF’s boundaries, it may be necessary to include additional properties within the APE of an undertaking.

Building Demolition

Demolition of a historic building or structure is always an adverse effect to the resource. Demolition may also adversely affect subsurface archaeological features and deposits when utility lines or underground storage tanks are removed and heavy machinery traffic crosses historic building sites.

Closure or Transfer of Buildings

The closure of buildings poses a risk of adverse effects as a result of neglect. If the building is not properly mothballed and provided with adequate ventilation, security protection, monitoring, and stabilization of the exterior, permanent damage may result and lead to increased deterioration of the structure and ultimately the destruction of the property. Transfer of ownership or control of a historic property is oftentimes considered an adverse effect unless protective measures are included in the transfer agreements. If the property is transferred by NASA to another party that does not have a cultural resources management plan, or has a plan that conflicts with WFF's plan, the building could potentially be neglected or undertakings could occur that would adversely affect the historic resource. In this case, an agreement for stewardship should be executed prior to the transfer.

Ground Disturbance

Ground disturbance (i.e., grading, digging, trenching, or plowing) poses a risk of potential effects to archaeological resources. Disturbance of a National Register-eligible archaeological site during an undertaking constitutes an adverse effect. Ground disturbance generally does not have an adverse effect on architectural resources. However, if the project affects important landscapes or settings, ground disturbance may have an adverse effect on the architectural resource.

3.5 TREATMENT OF HISTORIC PROPERTIES

3.5.1 Treatment of Archaeological Resources

The HPO is responsible for developing appropriate treatment measures for all National Register-eligible archaeological resources. Undertakings involving new ground disturbance (e.g., not occurring within previously disturbed ground) should be reviewed by the HPO for the potential to adversely affect archaeological resources, both known and unknown. The existing documentation of archaeological resources at WFF provides useful planning information related to the potential locations of archaeological sites. The treatment of known archaeological resources at WFF should involve, where practical, the avoidance of those sites identified as eligible or potentially eligible for listing in the National Register. The implementation of avoidance strategies requires early planning and project coordination, given that the most serious damage to significant archaeological resources is the inadvertent disturbance of sites during ground disturbing activities.

Avoidance strategies may include:

- Ensuring that no ground disturbance occurs within boundaries of National Register-listed or -eligible archaeological sites;
- Clearly delineating site boundaries on the ground and in planning, design, and construction documents;
- Including strict avoidance clauses in contract specifications; and

Other treatment methods include preservation in situ of significant or potentially significant archaeological sites. Preservation methods may include the use of specialized protective techniques, such as placing geotextile fabric across a site, which would minimize, or altogether prevent, an undertaking's adverse effects to the archaeological resource. Additional preservation methods may also include site stabilization in which significant archaeological resources could be treated to ensure long-term preservation. Stabilization may involve placing fill over a site or shoring eroding sites. Site specific treatment strategies would be developed by WFF through consultation with the Virginia SHPO and, as necessary, other consulting parties.

The benefits of avoidance and in situ preservation/stabilization of both significant and potentially significant archaeological resources include lower project costs and fewer schedule delays. In addition, because of the irreplaceable nature of archaeological sites, these methods are perhaps the most effective treatment for such resources.

If a site cannot be avoided and preservation in situ is not a feasible alternative, NASA and the Virginia SHPO may decide to excavate the site. Excavation of an archaeological resource can proceed after an ARPA permit has been issued and/or as mitigation measures under an MOA, which should address all necessary levels of archaeological study. Phase I surveys generally consist of the excavation of shovel probes across a defined area of potential effect in order to identify the presence or absence of archaeological sites, or to determine site boundaries or site significance of a previously identified site. More detailed investigation of sites previously identified by field study generally takes the form of a Phase II evaluation, which can consist of the excavation of vertically and horizontally-controlled test units, and of which the purpose is to evaluate the significance of an identified site, i.e., whether or not it is National Register-eligible and merits further preservation measures. A Phase III investigation, also referred to as data recovery, is practiced as a mitigation measure, in cases where a National Register-eligible resource cannot be avoided by project activities (VDHR 2011a). Phase III data recovery includes the excavation of a proportional volume of sediment in relation to total site dimensions in the form of vertically and horizontally-controlled test units. If a site cannot be avoided and preservation in situ is not a feasible alternative, Phase III excavation may be required. In such a case, WFF will follow the procedures outlined in Stipulation VIII, Resolution of Adverse Effects, of the PA, including accounting for the Minimum Standards for Archeological Data Recovery Plans at NASA Wallops Flight Facility (Appendix I of the PA) in the course of developing a data recovery plan.

3.5.2 Treatment and Protocols for Historic Buildings

The Secretary of the Interior's Standards for the Treatment of Historic Properties (U.S. Department of the Interior [USDI] 1995) (**Appendix H**) include four treatment options for historic buildings:

- **Restoration** returns a property to a particular period(s) of time. This treatment option may include the removal of later additions or changes, the repair of deteriorated elements, or the replacement of missing features.
- **Preservation** is the maintenance and repair of a property's existing historic materials and design as it evolved over time.
- **Rehabilitation** is the process of returning a property to a useful state. This encompasses adapting a property to meet continuing or changing uses while retaining the property's character-defining features.

- **Reconstruction** recreates missing portions of a property for interpretive purposes.

Although these treatment options do not provide specific technical guidance on which architectural features to retain, they do provide a framework for decision making.

The NHPA recognizes that the preservation of historic properties, while the preferred option, may not be feasible. Therefore, responsible management of built resources requires the development of treatment strategies based upon a variety of factors, including:

- Significance of the historic property and its relative importance in history;
- Physical condition of the building;
- Proposed use of the building;
- Mandatory code requirements; and
- Public interest.

A visual inspection of the building and a baseline assessment of the building's current condition and architectural integrity should be conducted to determine the most appropriate preservation strategy. It is essential to consider the need for examining archaeological resources when pursuing a preservation strategy for historic buildings, especially when new ground disturbance is planned as a part of preserving buildings. Archaeological investigation may be warranted for each of the above strategies, and, more importantly, may contribute information to help guide the rehabilitation or reconstruction of historic properties. The level of intervention necessary to preserve a building is based on the results of these investigations. It should be noted that implementation of the above guidance has begun for the one National Register-eligible architectural property at WFF, the Wallops Beach Life Saving Station (VDHR #001-0027-0100). Current conditions and further preservation suggestions for the National Register-eligible Wallops Beach Life Saving Station (VDHR #001-0027-0100) and Observation Tower (VDHR #001-0027-0101) are found in Section 5.0.

3.6 RECOMMENDED CULTURAL RESOURCES MANAGEMENT STRATEGIES AND ACTIONS

This section discusses general and specific cultural resources management procedures at WFF and makes recommendations to enhance the facility's treatment of cultural resources and ensure compliance with regulatory responsibilities. Each recommendation includes a discussion of findings describing the identified area, followed by specific recommended actions. While the recommendations are typical of suggestions for use at other bases with historic resources, each one has been carefully assessed for its applicability to the cultural resources of WFF.

3.6.1 General Cultural Resource Goals at WFF

To maintain and strengthen the Cultural Resources Management Program, it is recommended that WFF:

- Integrate the ICRMP into future WFF Master Plan Updates;
- Integrate cultural resources management into all future planning documents as they are revised (housing, engineering, etc.);
- Adhere to Federal and State standards for archaeological reporting and artifact curation; and

- Preserve and maintain cultural resources in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (USDI 1995).

3.6.2 Internal Administration

All WFF divisions and tenant organizations should be aware of the historic significance of the facility and the specific regulatory obligations that come with being located in or near National Register-eligible properties. The Facilities Management Branch should maintain communication with other WFF divisions and tenants about cultural resources through its HPO to integrate cultural resources information into the overall planning process at WFF. The following actions are recommended:

- Distribute copies of the ICRMP or summaries of its guidance to all divisions and tenants at WFF, and to all personnel or agencies that undertake planning or initiate actions that could affect cultural resources;
- Ensure project planners, designers, engineers, and managers consult with the HPO in the earliest stages of project planning to determine if cultural resources may be affected;
- Include a pre-qualification clause in all project specifications for undertakings that affect cultural resources stating that “Work should only be done by personnel who meet the Professional Qualification Standards, as established by the Secretary of the Interior and published in 36 CFR Part 61, Appendix A”; and
- Implement the Standard Operating Procedures contained in Section 4.0 of this ICRMP.

3.6.3 Planning for the Wallops Beach Life Saving Station (VDHR #001-0027-0100)

The Wallops Beach Life Saving Station (VDHR #001-0027-0100) and associated Observation Tower (VDHR #001-0027-0101) currently are not occupied or utilized by WFF. WFF has secured and maintains both historic resources in accordance with NPS Preservation Brief 31, Mothballing Historic Properties. No plans for the future adaptive reuse of this historic property have been identified. If NASA determines that disposition (demolition, relocation, transfer, lease, or excess) of the station or tower is the future course of action, WFF will implement the provisions included in Stipulation V, Planning for the Wallops Beach Life Saving Station (VDHR #001-0027-0100), of the PA for assessing the effect and, as determined necessary, mitigating an adverse effect of the proposed action.

3.6.4 Periodic Re-evaluation of the Historic Properties at WFF

This ICRMP is intended to be a document that responds to changing mission priorities and planning goals at WFF and also provide guidance on a wide range of HPO issues and situations for the coming years. In order for the document to continue to be a useful tool, the ICRMP should be reviewed every five years and revised as necessary. Further, as time passes, a periodic re-evaluation of architectural resources and an analysis of the potential eligibility of resources should be undertaken, along with an evaluation of the effectiveness of cultural resources planning strategies. In accordance with NPR 8510.1 and Section 110 of the NHPA, resources 45 years in age or older and resources less than 50 years old that may have exceptional significance at WFF should be evaluated to determine their potential eligibility for listing in the National Register. In addition, resources that have previously been determined eligible or ineligible for listing in the National Register prior to their turning 50 years of age should be re-evaluated to address the passage of time, changing perceptions of significance, subsequent changes to the property, or incomplete prior evaluations. All identification and evaluation surveys should be undertaken by personnel

who meet the Professional Qualification Standards, as established by the Secretary of the Interior and published in 36 CFR Part 61, Appendix A (**Appendix H**).

The HPO should review the WFF real property inventory to develop the priorities for these identification and evaluation efforts based on integration with Sections 106 and 110 responsibilities and funding availability. Properties in likely APEs for known upcoming WFF undertakings, properties at risk from damage from natural processes or deterioration, and properties for which WFF lacks sufficient information to make informed management decisions should be given priority. Certain structures may be excluded from future identification and evaluation efforts at WFF because they possess virtually no potential for significance under NASA themes, are ubiquitous to any NASA facility, and generally are not associated with significant events, people, or design. These structures include utility infrastructure such as electrical substations, sewage pumping stations, and aboveground water mains, and ancillary infrastructure such as street lighting, roads, curbs, sidewalks, and fences.

3.6.5 Training for Cultural Resources Management Personnel

As WFF develops its cultural resources program, it will be necessary for the HPO and other personnel involved in planning and engineering to take part in cultural resources management training. Training should provide familiarity with historic preservation legislation, procedures, and general requirements for compliance. **Table 3-1** provides a listing of courses and training opportunities offered by the National Preservation Institute (<http://www.npi.org/>).

Table 3-1. Courses and Training Opportunities		
Course Title and Duration	Description	Participants
Cultural Resources Management Compliance for Non-Specialist 3 Days	Discuss how to survive and thrive wearing the “second hat” of cultural resources manager when you have been assigned as an agency’s cultural resources manager or historic preservation officer. Learn how to deal with legal responsibilities under Section 106 of the NHPA and other cultural resources authorities and examine how this relates to laws such as NEPA, CERCLA, and the Endangered Species Act.	Managers in agencies, tribes, and citizens' groups with backgrounds in disciplines such as biology, contracting, engineering, facilities management, geology, law, real estate, and soils science.
NEPA Compliance and Cultural Resources 1 Day	Learn about environmental impact analysis, cultural resources management, and historic preservation responsibilities and relationships. Assess practical applications for effectively integrating the analyses required by NEPA, related environmental regulations, and the NHPA.	Managers responsible for compliance requirements; historic preservation, archaeological, and environmental consultants and planners.
Section 106: An Introduction 3 Days	Learn the basics of project review under Section 106 of the NHPA. This seminar emphasizes practicalities—how to avoid pitfalls and victimization by myths. Discuss recent changes in regulations and procedures, with an emphasis on coordination with NEPA and other laws.	Cultural resources and environmental consultants; Federal, State, local, and tribal officials and planners.

Table 3-1. Courses and Training Opportunities		
Course Title and Duration	Description	Participants
GIS: Practical Applications for Cultural Resource Projects 2 Days	Review introductory geographic information system (GIS) concepts combining spatial technologies and database management systems in the area of historic preservation. Learn how to use GIS applications for identification, evaluation, protection, and preservation of cultural resources. From assisting with inventories, to mapping historic districts and battlefields, to mitigating the impact of disasters on historic areas, GIS technology can be used to provide a better basis for planning and decision making for the nation's heritage.	Archaeologists, cultural resource managers, planners, landscape architects, and historians.
Native American Cultural Property Law 2 Days	Review the federal laws intended to preserve Native American heritage through the protection of cultural practices and sacred lands. Examine the use of statutes as tools to manage tangible and intangible cultural property. Discuss government-to-government obligations, court decisions, and case studies to illustrate federal policies and practice. Consider the legal, cultural, and historical perspectives resulting from decisions affecting Native American cultural property. Learn how the consultation process enables tribes, federal entities, and other parties to achieve resolution.	Members and staff from Indian tribes, Native Hawaiian groups, indigenous communities, Tribal Historic Preservation Offices, SHPOs, government agencies, and preservation and environmental specialists.
The Secretary of the Interior's Standards: Treatment Considerations 2 Days	The Secretary of the Interior's Standards for the Treatment of Historic Properties form the basis for historic property rehabilitation for all federal projects, for federal tax benefits, and often for state, local, and private rehabilitation projects. Explore the standards in detail with particular attention to the preservation of historic fabric, sustainability, green rehabilitation, and the use of renewable materials. Participants have the opportunity to discuss the application of the Standards to their projects.	Property owners, developers, cultural resource managers, architects, and design professionals involved in developing or reviewing rehabilitation projects.

3.6.6 Management Strategies for Archaeological Resources

Management of archaeological resources at WFF may present unique planning considerations. Projects involving ground disturbance should be carefully examined for their potential to adversely affect archaeological sites or human remains. The most serious threat to potentially significant archaeological resources is the inadvertent disturbance of such resources. For archaeological resources at WFF that may be eligible for the National Register, the effective management of such resources will involve clear communication and early involvement in the planning process by the HPO. Specific options for

addressing these management issues, such as avoidance or preservation in place versus data recovery are described in Section 3.7.2.

Clearly delineating the boundaries of known archaeological sites and/or areas of archaeological sensitivity on preliminary design plans or other construction documents will inform all parties of the need to consider such resources in project planning. Doing so will enable effective management of known and unknown archaeological resources at WFF. Specific measures should be included in contract specifications that require contractors to avoid known archaeological sites. Periodic monitoring of contractors working in archaeologically sensitive areas should be conducted by the HPO to ensure compliance with contractual specifications. Archaeological investigations, in accordance Stipulation VII, Archaeology, of the PA, should be conducted where potential adverse effects may occur. If a site cannot be avoided and preservation in situ is not a feasible alternative, Stipulation VIII, Resolution of Adverse of Effects, of the PA will be followed.

Ensuring compliance with 36 CFR Part 79, *Curation of Federally-Owned and Administered Archaeological Collections*, will also be a necessary component of effective management of archaeological resources. The HPO will follow Stipulation XI, Curation, of the PA regarding archaeological materials and appropriate field and research notes, maps, and drawing and photographic records collected as part of projects carried out under the PA (with the exceptions of human skeletal remains and associated funerary objects, which shall be treated in accordance with Stipulation XIII, Human Remains, and management of artifacts having such historical and educational or other value that have emerged and will emerge from the aeronautical and space programs, which fall under the Agreement Between NASA and the Smithsonian Institution Concerning the Transfer and Management of NASA Historical Artifacts).

In accordance with the provisions in Stipulation II of the PA between NASA, the Virginia SHPO, and ACHP, NASA WFF will need to re-evaluate the efficacy of the archaeological predictive model developed as a result of the 2003 Cultural Resources Assessment (URS/EG&G 2003), and establish a formal plan for the management of the Revolutionary War Military Earthworks (44AC0089) archaeological resource.

3.7 MITIGATION STRATEGIES

3.7.1 Historic Buildings

When restoration, reconstruction, preservation, or rehabilitation of a building is not feasible, mitigation measures may be negotiated in accordance with Stipulation VIII, Resolution of Adverse Effects, of the PA. There are eight standard techniques that can be used to mitigate adverse effects on built resources.

3.7.1.1 Recordation

Recordation of historic buildings has traditionally been a frequent mitigation option for projects that necessitate adverse effects to historic properties. The level and type of recordation generally is negotiated on a case-by-case basis with the SHPO and agreed to under an MOA as appropriate under the Section 106 process.

3.7.1.2 Design Review

Projects involving new construction that will have an adverse effect on historic properties frequently require compliance with 36 CFR Part 67, the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*. These standards require new construction design to be compatible with the affected property in size, scale, color, material, and architectural character. This does not mean that the new construction must, or should be, an exact replica of the affected property.

3.7.1.3 Covenants/Easements

Preservation covenants, or deeds of easements, are frequently required when significant properties are transferred from Federal to private ownership. Covenants and easements ensure ongoing preservation and maintenance of significant historic, architectural, or cultural values, in compliance with 36 CFR Part 67, the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*.

3.7.1.4 Moving Historic Properties

Moving a historic property may be the best preservation approach when faced with an otherwise unavoidable adverse impact and the destruction of the property. The recommendations set forth in the Heritage Preservation Services, Department of the Interior publication *Moving Historic Buildings* (Curtis 1991), should be followed in executing the move of an historic property.

3.7.1.5 Landscape Features

Landscaping may be used to mitigate the effects of new construction and/or site relocation. Appropriate landscaping provides a visual and noise screen for historic properties, while appropriate period landscape design can enhance the architectural and historic values of an historic building or design.

3.7.1.6 Architectural Salvage

Salvage of significant building “fabric” such as historic lighting fixtures or decorative details is a mitigation strategy employed in projects in which the demolition of historic properties cannot be avoided. In such cases, project effects are mitigated through the reuse or curation of significant features. The execution of salvage stipulations requires the identification, removal, and storage of salvageable material.

3.7.1.7 Public Interpretation

As part of large-scale mitigation efforts, public interpretation of the resource may be recommended. Public interpretation programs are useful for communicating project information to special interest groups and to the public at large. These efforts can be used effectively by WFF to promote public support for its cultural resources programs and to mitigate negative public sentiment due to misinformation, or due to the perceived destruction of historical sites or properties. WFF will follow the procedures outlined in Stipulation VI, Public Benefit and Education, of the PA, with regard to implementing public outreach and education initiatives related to historic buildings.

3.7.2 Archaeological Resources

As discussed in previous sections, the most effective treatment of significant archaeological resources is avoidance. In terms of mitigation, however, the agency and HPO must still consider whether the project will have the potential to affect other archaeological resources. When avoidance of a National Register-

eligible archaeological site is not possible, mitigation strategies must be developed to reduce or eliminate the adverse effects of an undertaking. The mitigation of archaeological resources may require consideration of the unique characteristics of the site, the scope of the undertaking itself, and other limiting factors. Both the natural features of the site, and the cultural features for which it is eligible for listing in the National Register must be factored into a mitigation strategy. For example, some archaeological resources are found buried at depths that become both unsafe and costly to excavate. Therefore, in accordance with Stipulation VIII, Resolution of Adverse Effects, of the PA, the HPO, in consultation with the Virginia SHPO and other consulting parties, will carefully review the nature and extent of the effects of the undertaking and the importance of the resources affected to determine whether standard treatments such as data recovery or documentation should be carried out, or if alternative or creative mitigation approaches should be considered.

3.7.2.1 Data Recovery Investigation

Conditions permitting, mitigation may involve extensive excavation, also called Phase III Data Recovery Investigations, of an archaeological site where adverse effects to the site cannot be avoided. Depending on the nature of impacts, the significance of the site, and the importance of particular archaeological resources to the general public or Native American tribes, mitigation may include either the total recovery of data or a sampling of data. Mitigation through data recovery can be expensive due to the labor-intensive nature of such investigations. Given that archaeology is by its very nature a destructive process, data recovery should only be conducted after thorough consultation with all parties included in the MOA, and should be undertaken by qualified professionals.

Destructive methods (i.e., excavation) should not be applied to portions or elements of the property if nondestructive methods (e.g., remote sensing) are practical and can document the resources appropriately. If portions or elements of the property being documented are to be preserved in place, the archaeological investigation should employ methods that will leave the property as undisturbed as possible. However, in cases where the property will be destroyed by, for example, construction following the investigation, it may be most practical to gather the needed data in the most direct manner.

Archaeological investigations seldom are able to collect and record all possible data. It is essential to determine the point at which further data recovery and documentation fail to improve the usefulness of the archaeological information being recovered. One purpose of the research design is to estimate those limits in advance and to suggest at what point information becomes redundant. Investigation strategies should be selected based on these general principles, considering the following factors, as outlined in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (USDI 1983; available at http://www.cr.nps.gov/local-law/arch_stnds_0.htm):

- Specific data needs;
- Time and funds available to secure the data; and
- Relative cost efficiency of various strategies.

Depending upon the type of archaeological resource, data recovery may involve extensive background research, development of a historic or prehistoric context, field investigation, artifact processing and analyses, specialized analyses such as radiocarbon dating, faunal and floral analyses, geomorphological investigation, or landscape reconstructions.

Perhaps the most important aspect of a data recovery effort is the development of a research design that should outline both broad and site-specific questions for which the site can address and add to an understanding of history or prehistory. The research design facilitates an orderly, goal-directed and economical project. However, the research design must be flexible enough to allow for examination of unanticipated but important research opportunities that arise during the investigation.

The research design, in addition to providing for appropriate ethnographic research and consultation, should consider concerns voiced in previous phases of work. In the absence of previous efforts to coordinate with local or other interested groups, the research design should anticipate the need to initiate appropriate contacts and provide a mechanism for responding to sensitive issues, such as the possible uncovering of human remains or discovery of sacred areas.

If a site cannot be avoided, and preservation *in situ* is not a feasible alternative, excavation of an archaeological resource should only proceed when an ARPA permit has been issued and/or as mitigation measures under an MOA, which should address all necessary levels of archaeological study (Section 4.5 contains more detailed information about ARPA compliance). WFF will follow the procedures outlined in Stipulation VIII, Resolution of Adverse Effects, of the PA, including accounting for the Minimum Standards for Archeological Data Recovery Plans at NASA Wallops Flight Facility (Appendix I of the PA) in the course of developing data recovery plans.

3.7.2.2 Public Outreach and Education

In addition to investigative measures, an archaeological mitigation plan should include a public outreach component to disseminate information to the general public. Exhibits of materials recovered from archaeological investigation may be used to promote the preservation efforts of WFF and inform the general public of the significance of such resources. Pamphlets and brochures explaining the archaeological process, site information, and project sponsors are also effective outreach tools. WFF will follow the procedures outlined in Stipulation VI, Public Benefit and Education, of the PA, with regard to implementing public outreach and education initiatives related to archaeological investigations.

3.7.2.3 Geographic Information Systems

As part of mitigation efforts, the management of data, or information, collected from a data recovery effort may involve the use of GIS to store and analyze such information. The HPO utilizes a robust GIS for WFF to assist in effectively managing all preservation aspects of both archaeological and architectural resources.

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4.0 STANDARD OPERATING PROCEDURES

4.1 INTRODUCTION

Prior to initiating the Standard Operating Procedures described below, refer to the *Programmatic Agreement Among the National Aeronautics and Space Administration, the Virginia State Historic Preservation Office, and the Advisory Council on Historic Preservation Regarding the Management of Facilities, Infrastructure, and Sites at the National Aeronautics and Space Administration's Wallops Flight Facility, Wallops Island, Accomack County, Virginia* (the PA) (**Appendix B**). The PA is intended to facilitate the management of certain cultural resources actions generally requiring review by consulting parties. In certain cases, the requirements set forth by the PA may supersede the procedures outlined by the ICRMP.

4.2 PROCEDURE 1: WFF PROJECT REVIEW PROCESS

The WFF HPO, in collaboration with the Environmental Management Division, uses two different project review processes, dig requests and project funding requests and approvals, to look at all the different types of undertakings that are planned at WFF and identify whether or not they will require SHPO review under the terms of the PA. Environmental reviews must be completed before the project can proceed. The cultural resources review process takes place during the environmental review.

NASA WFF project managers are required to submit a dig request for all maintenance, repair, or construction projects that will involve excavating more than 6 inches into the ground. Project specifics are included with the dig request. The dig request is distributed to the Environmental Management Division for review to determine if the project has the potential to affect historic properties. The review should include overlaying GIS layers of the architectural and historical inventories and archaeological sensitivity zones with the project location to determine the cultural sensitivity of the area. Further, the review should identify whether the project is one of the activities included in Appendix G of the PA, Activities That Have Limited Potential to Effect Historic Resources, and does not require SHPO review. All projects in the vicinity of a historic building or structure or involving disturbing soils must be identified to the WFF HPO.

The Facilities Management Branch, which includes the WFF HPO, and Environmental Management Division review all proposed demolition, construction, and building modification projects in which funding is requested. This allows for early identification of projects in areas of concern for cultural resources. Monthly planning meetings with Environmental Management Division and Facilities Management Branch staff, including the WFF HPO, are held to go over those projects in which funding was approved, and to review project drawings and specifications. The WFF HPO will review the pre-project documentation to determine whether the proposed project will or will not require SHPO review under the terms of the PA.

For undertakings at WFF identified through either review process as having the potential to affect historic properties, the WFF HPO will coordinate with the SHPO and other consulting parties in accordance with the provisions of Stipulation IV, Standard Review Process, of the PA (see Procedure 2). Undertakings identified in the list of activities included in Appendix G of the PA, or that do not have the potential to cause effects to historic properties will be documented in accordance with the provisions in Stipulation

III, Activities Not Requiring Review Under this Agreement, of the PA, and included in the annual status report to the SHPO, per Stipulation XV, Annual Reporting, of the PA.

4.3 PROCEDURE 2: SECTION 106 COMPLIANCE

The provisions of Stipulation IV, Standard Review Process, of the PA outline procedures to follow for Section 106 review consultation of undertakings at WFF that may affect historic properties either at or outside of WFF. These procedures should be implemented in addition to the requirements set forth by Standard Operating Procedure 2 of this management document.

The HPO is designated as the point of contact for the Section 106 review process undertaken at WFF, including projects proposed by tenant organizations that are subject to the Section 106 process. All tenant organizations will follow an appropriate Section 106 review process and will include the WFF HPO in all Section 106 actions. Section 106 of the NHPA, as amended, requires Federal agencies to consider the effects of their undertakings on historic properties and to provide the ACHP a reasonable opportunity to comment on such undertakings. Appendix G of the PA identifies activities that have limited potential to affect historic properties, and do not require Section 106 review per the terms of the PA. For all undertakings at WFF not otherwise excluded from review under the PA, the Section 106 process must be completed prior to starting work. Initiating the Section 106 process in the early planning stages of a project allows the most complete range of options to minimize or mitigate adverse effects on historic properties.

A historic property is defined as any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register (36 CFR § 800.16[y]). Currently, WFF includes two historic properties, the Wallops Beach Life Saving Station (VDHR #001-0027-0100) and associated Observation Tower (VDHR #001-0027-0101), and the Revolutionary War Military Earthworks (44AC0089). The Life Saving Station and Observation Tower were evaluated in 2004 and determined eligible for listing in the National Register in consultation with the Virginia SHPO. Eleven archaeological sites have been identified on the WFF. The Military Earthworks, although recommended eligible for the National Register, has not been formally determined eligible for listing in the National Register in consultation with the Virginia SHPO. Per the terms of the PA, however, the HPO will treat the site as a historic property. Of the 10 other identified archaeological sites at WFF, one is recommended as eligible for the National Register, two sites are unevaluated for National Register eligibility, and the remaining seven archaeological sites have been either recommended or determined to be not eligible (refer to Dinnell and Collier 1990; URS/EG&G 2003; Espenshade and Lockerman 2009; New South Associates 2010; Espenshade 2011a; and VDHR 2004b, 2010a, 2010b, 2010c, 2011c, 2011d for details).

WFF is responsible for initiating the Section 106 process (36 CFR § 800.2[a]). Consultation is undertaken among the agency official (in this case, an official at WFF with approval authority), the SHPO, and consulting parties (see Procedure 4). Consulting parties include those individuals or organizations with an interest in the effects of the undertaking on the historic properties (36 CFR § 800.2[c]). The ACHP may also participate in the process if the criteria defined in 36 CFR Part 800, Appendix A, are met. Under the regulations, SHPOs are assigned key roles in the Section 106 consultation. Consultation for undertakings at WFF is to be conducted with the Virginia SHPO. The VDHR maintains a full-time staff to assist agencies in consultation. The SHPO is required to respond to requests for project review within 30 days of receiving appropriate documentation.

The procedure set forth below defines how WFF meets these statutory requirements based on standard regulations. The Section 106 process consists of five primary steps:

1. Determine APE and Initiate the Section 106 Process;
2. Identify Historic Properties;
3. Assess Adverse Effects;
4. Resolve Adverse Effects; and
5. Proceed

4.3.1 Step 1. Initiate the Section 106 Process

1. *Establish undertaking.* The HPO determines whether the proposed action or activity meets the definition of an undertaking and, if so, whether it is a type of activity with the potential to affect historic properties. An undertaking is defined as

a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency (36 CFR § 800.16[y]).

The provisions of Stipulation III, Activities Not Requiring Review Under this Agreement, and Appendix G of the PA, Activities That Have Limited Potential to Effect Historic Resources, delineate undertakings that may be conducted without further review. All undertakings not included in Stipulation III or Appendix G of the PA, or any undertakings that may adversely affect historic properties, must follow the standard review process as outlined in Stipulation IV of the PA (**Appendix B**).

Tenant organizations and agencies must consult with the HPO to determine whether a proposed action constitutes an undertaking. An undertaking will have an effect on a historic property when the action has the potential to result in changes to the character or use of the historic property within the (APE. The APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (36 CFR § 800.16[d]). The APE is influenced by the scale and nature of an undertaking and may differ among different kinds of effects caused by the undertaking.

The determination of whether the proposed action or activity is an undertaking under Section 106 will result in one of two outcomes:

- a) *No potential to cause effects.* If the undertaking falls within the list of activities included in Stipulation III or Appendix G of the PA, or does not have the potential to cause effects on historic properties, the HPO has no further obligations under Section 106 and the action may proceed. The HPO provides documentation of this finding, as set forth in Stipulation III and Appendix J of the PA.
- b) *Potential to cause effects.* The undertaking is determined to have the potential to cause effects on historic properties. **Go to Step 2.**

2. *Coordinate with other reviews.* The HPO coordinates the Section 106 review, as appropriate, with WFF's planning schedule and any other required reviews (e.g., NEPA, NAGPRA). The HPO may use information from other review documents to meet Section 106 requirements.
3. *Plan for public involvement.* In consultation with the SHPO, the HPO will plan for involving the public in the Section 106 process (see Section 4.5, Procedure 4).
4. *Identify other consulting parties.* In accordance with the PA, consult as appropriate with the ACHP, Catawba Indian Nation, and the Pocomoke Indian Nation. For complex or potentially controversial undertakings or undertakings with an APE that extends outside of WFF, the HPO will use the list of contacted parties in Appendix D of the PA to help identify other potential consulting parties (see Section 4.5, Procedure 4).

4.3.2 Step 2. Identify Historic Properties

1. *Determine scope of identification efforts and identify historic properties.* In accordance with the provisions of Stipulations IV and VII of the PA, the HPO, in consultation with the SHPO, will determine and document the APE of the undertaking and review the existing historic property inventory to determine whether or not historic properties are located within the proposed APE in conformance with VDHR guidelines. Identification of historic properties will include examination of resources that are 45 years of age or older and have not previously been evaluated and resources less than 50 years old that may have exceptional significance. Additionally, all records and personal property associated with such a building will be included in the evaluation of that property's historic significance. The HPO may also seek information from consulting parties, as appropriate. **Select option a or b.**
 - a) *Historic properties affected.* The HPO determines that historic properties will be affected by the undertaking and/or are located within the APE. **Go to Step 3.**
 - b) *No historic properties affected.* The HPO determines that there are no historic properties present, or there are historic properties present but the undertaking will have no effect upon them. The HPO provides documentation of this finding, as set forth in Stipulation IV of the PA.

All undertakings not included in Stipulation III or Appendix G of the PA must follow the standard review process as outlined in Stipulation IV of the PA. In such a case, the HPO notifies all consulting parties of the decision and makes the documentation available to the public.¹ **Select option i or ii.**

- i. If the SHPO does not object within 30 days of receipt of an adequately documented finding, WFF's responsibilities under Section 106 are fulfilled. After documenting these steps in WFF administrative files, the proposed action may proceed.

¹ The NHPA and the ARPA mandate that federal agencies only disclose the locations of cultural resources to the public if the disclosure would not create risk of harm to the resources. The HPO will comply with these mandates when making cultural resource documentation available to the public.

- ii. The SHPO disagrees with WFF's determination and the proposed undertaking is considered to have an effect on historic properties. **Go to Step 4.**

4.3.3 Step 3. Assess Adverse Effects

1. *Apply criteria of adverse effect.* The HPO, in consultation with the SHPO and consulting parties, assesses the effect(s) of the proposed undertaking on historic properties following the criteria of adverse effect outlined in 36 CFR § 800.5. **Select option a or b.**

- a) *Finding of no adverse effect.* The HPO, in consultation with the SHPO, determines that the proposed undertaking does not meet the criteria of adverse effect (see Section 4.4.3, Procedure 3) and, therefore, will have no adverse effect on historic properties. A finding of no adverse effect may also result if the undertaking is modified or conditions are imposed, such as subsequent review of plans for rehabilitation by SHPO, to ensure consistency with the Secretary of the Interior's Standards for the Treatment of Historic Properties (USDI 1995) and to avoid adverse effects.

The HPO documents the finding of no adverse effect following standards set forth in 36 CFR § 800.11(e). The HPO notifies the SHPO and all consulting parties of the finding and provides them with the documentation. The SHPO must respond to the finding within 30 days. **Select option i or ii.**

- i. *Agreement with finding.* If the ACHP is not involved in the review process, the action may proceed if the SHPO agrees with the finding. Failure of the SHPO to respond within 30 days from receipt of documentation will be considered agreement of the SHPO with finding.
- ii. *Disagreement with finding.* If the SHPO or any consulting party disagrees with WFF's determination within the 30-day review period, then disputes will be resolved in accordance with Stipulation XIV of the PA.
- b) *Finding of adverse effect.* If it is determined that the proposed undertaking will have an adverse effect on historic properties, the HPO will conduct further consultation to resolve the adverse effect in accordance with Stipulation VIII of the PA. **Go to Step 4.**

4.3.4 Step 4. Resolve Adverse Effects

1. *Continue consultation.* The HPO continues consultation with the SHPO and consulting parties as appropriate to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. The HPO will follow the procedures established in Stipulation VIII, Resolution of Adverse Effects, of the PA, and notify the ACHP of the adverse effect finding and determine whether the ACHP will participate in the consultation to resolve adverse effects.
2. In addition to the consulting parties identified under the PA, including the Catawba Indian Nation and Pocomoke Indian Nation, other individuals and organizations can be invited to become consulting parties on a project-specific basis. The HPO makes information available to the public, including documentation specified in 36 CFR §

800.11(e), and provides an opportunity for comment about resolving the adverse effects of the proposed undertaking.

3. *Resolve adverse effect.* WFF, SHPO, and consulting parties will consult to address adverse effects and prepare a MOA in accordance with Stipulation VIII of the PA. In order to meet the requirements of Section 106, the HPO must submit a copy of the executed MOA, along with the documentation specified in 36 CFR § 800.11(f), to the ACHP prior to approving the undertaking. **Go to Step 5.**

- c) *Failure to resolve adverse effect.* Any dispute regarding the development of MOA stipulations will be resolved in accordance with Stipulation XIV of the PA.

4.3.5 Step 5. Proceed

Once the ACHP receives the signed MOA for filing, then WFF has discharged its compliance under Section 106 and the proposed undertaking can proceed, subject to the terms of the MOA. This is the end of the Section 106 compliance process. All documentation and correspondence regarding the process should be kept on file in the HPO office. **Figure 4-1** illustrates the Section 106 process.

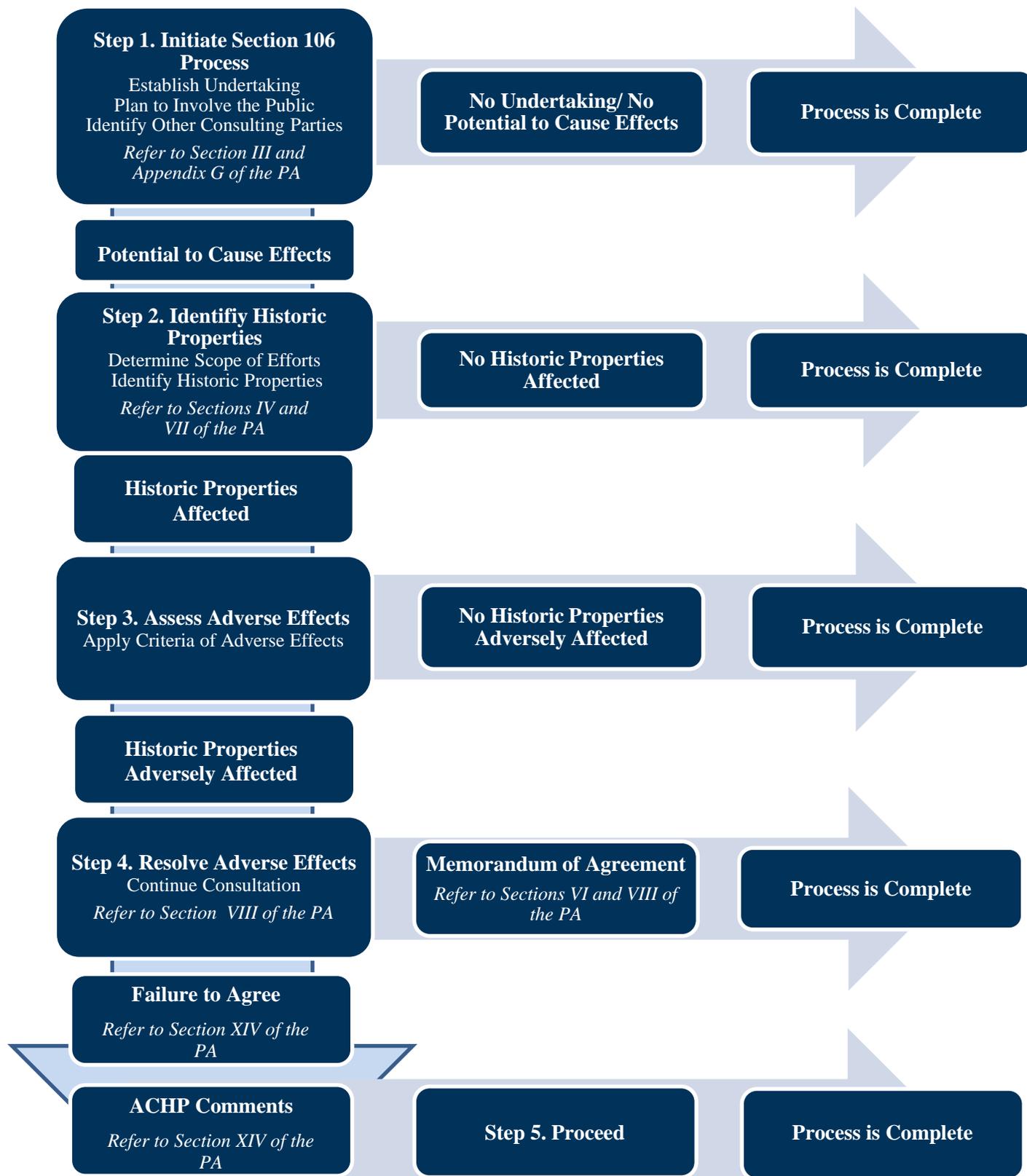


Figure 4-1. Section 106 Flow Chart

4.4 PROCEDURE 3: ASSESSING EFFECTS ON HISTORIC PROPERTIES

For WFF managers to assess effect, they must be able to determine what constitutes an effect on a historic property and then reach a formal decision of effect in consultation with the SHPO. Therefore, the HPO should be informed of any actions that may affect cultural resources at, or in the vicinity of, WFF prior to initiating work.

4.4.1 Criteria of Effect

According to 36 CFR § 800.4(d), undertakings can be determined to have no effect, no adverse effect, or an adverse effect upon historic properties. WFF must first determine if an effect would occur. When WFF determines there would be an effect to historic properties, then WFF must apply the Criteria of Adverse Effect to determine whether the effect is harmful to the significance and integrity of the affected historic property. The process of determining effect should be carried out in consultation with the SHPO.

4.4.2 No Effect/Effect

An undertaking is determined to have no effect or no effects on historic properties when no historic properties are directly or indirectly impacted by an undertaking. Stipulation III and Appendix G, Activities Not Requiring Review Under this Agreement, of the PA, detail those activities conducted at WFF that have limited potential to affect historic properties. In accordance with Stipulation XV and Appendix J, Annual Reporting, of the PA, the HPO will provide an annual status report to the SHPO, ACHP, and the Catawba and Pocomoke Indian Nations that includes a list of historic properties treated during the reporting period including activities not requiring review and activities resulting in no effect or no adverse effect to National Register-eligible or listed properties.

A proposed undertaking is determined to have an effect if it alters the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register [36 CFR § 800.16(i)]. Simply stated, any action that results in changes to specific features of a historic property is considered an effect. It is essential, therefore, to identify those characteristics that make a property significant in assessing effects.

4.4.3 Adverse Effect

If it is determined that a proposed project will have an effect on a historic property, the project must next be assessed to determine whether it will result in an adverse effect. The HPO should apply the Criteria of Adverse Effect in making this determination. An adverse effect is found when an undertaking alters, directly or indirectly, any of the characteristics of a historic property that qualify it for the National Register. These criteria stipulate that an effect will be adverse if an undertaking:

- Causes physical destruction, damage, or alteration of all or part of the affected historic property;
- Isolates the historic property from, or alters the character of, the property's setting, when that setting contributes to the property's qualification in the National Register;
- Introduces visual, audible, or atmospheric elements out of character with the historic property, or that alter its setting;
- Results in the neglect of a property that leads to the deterioration or destruction of that property; or

- Results in the transfer, lease, or sale of the property without adequate and legally enforceable restrictions or conditions to ensure the long-term preservation of the property's historic significance.

After these criteria have been applied, WFF must make a formal determination as to whether the project will have no adverse effect or an adverse effect, again in consultation with the SHPO, at the discretion of WFF.

4.4.4 Mitigation of Adverse Effect

WFF and SHPO may agree upon measures to avoid the adverse effect. If an undertaking is determined to have an adverse effect upon a historic property, action may be taken to revise those specifications of the project that will have an impact on the resource; or mitigate the adverse effects of the property upon the resource so that the essential historical value of the property is preserved, although the property itself may be affected.

The provisions of Stipulation VIII, Resolution of Adverse Effects, of the PA, outline the process and procedures to follow in identifying mitigation measures. Examples of alternative mitigation measures are provided in Stipulation VI, Public Benefit and Education, of the PA.

4.4.5 Summary of Procedure

1. *Determine APE in consultation with SHPO.*
2. *Determine if historic properties are present.* An undertaking will have no effect when no historic properties are determined to be present.
3. *Determine nature of proposed undertaking.* When there is any doubt about the effects of a proposed undertaking on cultural resources, the undertaking should be submitted to the HPO for internal review.
4. *Notify the HPO of proposed undertaking.* The HPO is responsible for determining what action is required under the stipulations of the PA.
5. *The HPO will initiate Section 106 consultation in accordance with the provisions of the PA.* All Section 106 consultation required for historic properties located at WFF will be initiated and conducted by the HPO or individual tenant organizations, who will ensure communication and coordination on all Section 106 consultation with the HPO.

4.5 PROCEDURE 4: PUBLIC PARTICIPATION DURING SECTION 106 CONSULTATION PROCESS

In accordance with chapter 3061 of the NHPA, WFF has established a preservation program for the identification, evaluation, protection, and nomination of its historic properties to the National Register. To that end, WFF has conducted numerous studies of its historic properties, including: surveys to identify archaeological sites and historic buildings; and evaluation studies to determine the eligibility of sites and buildings for listing in the National Register.

WFF's commitment to the stewardship of its historic properties includes compliance with 36 CFR § 800.2(c), which requires the inclusion of consulting parties in the Section 106 process. During the process for establishing the PA, WFF identified potential consulting parties to participate in the development of the PA pursuant to 36 CFR § 800.2(c)(3) and 36 CFR § 800.2(c)(5). Contacted parties are listed in

Appendix D of the PA. With the exception of the Catawba and Pocomoke Indian Nations, all other parties declined to participate.

For future studies conducted at WFF that are not included in Stipulation III and Appendix G, Activities That Have Limited Potential to Affect Historic Resources, of the PA, the HPO will follow the provisions of Stipulation IV of the PA, Standard Review Process, and coordinate with the SHPO and other consulting parties.

For proposed undertakings by NASA WFF that have the potential to affect historic properties located off the facility, the HPO will:

- Identify those parties that may be reasonably expected to have a substantive interest in a WFF undertaking (refer to Appendix D in the PA) and furnish them with copies of WFF's SHPO consultation correspondence as a means of notification and to serve as an invitation to participate in the consultation; and
- At the request of interested parties, circulate correspondence between the SHPO, ACHP, and WFF on specific undertakings, including cases in which these regulatory bodies have determined that WFF undertaking will have an adverse effect on historic properties.

4.6 PROCEDURE 5: ARCHAEOLOGICAL RESOURCE PROTECTION ACT COMPLIANCE

Under the ARPA, NASA is required to protect archaeological resources 100 years old or older on property under its jurisdiction from knowing sources of destruction without adequate review under ARPA or other federal statutes. NASA must issue permits for non-governmental exceptions to ARPA. Issuance of a permit is not considered an undertaking and does not require Section 106 review; however, acquisition of a permit does not fulfill the requirements of Section 106 review.

Upon receipt of an application for a permit to excavate or remove an archaeological resource, the HPO will ensure that:

- Stipulations in Stipulations VII and VIII of the PA are satisfied;
- The applicant is qualified to carry out the permitted activity;
- The activity is undertaken for the purposes of furthering archaeological knowledge in the public interest and for Section 110 or 106 compliance;
- The archaeological resources excavated or removed from public lands will remain the property of the United States, and such resources and copies of associated archaeological records and data will be curated in accordance with Stipulation XI, Curation, of the PA;
- The activity pursuant to the permit is consistent with any management plan applicable to the public lands concerned; and
- Information on the nature and location of archaeological resources will be handled in accordance with Stipulation XIX, Handling of Sensitive but Unclassified Data, of the PA.

Further details on the terms and conditions of archaeological permits issued under ARPA are stipulated in the Act, which is provided in **Appendix G, Federal Legislation**.

4.7 PROCEDURE 6: NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT COMPLIANCE

NAGPRA, which was enacted in 1990, governs the repatriation and protection of Native American (American Indian, Inuit, and native Hawaiian) remains, funerary objects, sacred objects, and objects of cultural patrimony on lands controlled or owned by the United States. The following sections present general principles underlying the Native American consultation process, as well as procedures to be followed with regard to existing collections, intentional excavations, and inadvertent discoveries.

4.7.1 General Principles for Native American Consultations

Native Americans often have strong religious and cultural ties to natural areas. Where applicable, WFF must consider these interests in land management decision making to identify and protect Native American cultural resources. WFF will carry out consultations with Native American tribal governments in a manner that respects the sovereign status of each such Federally recognized tribe. In accordance with NPR 8510.1 and the provisions of the PA, WFF will consult to the greatest extent practical with the Catawba Indian Nation and the Pocomoke Indian Nation, who were identified as consulting parties in conjunction with the development of the PA. Consultations will be conducted with sensitivity to cultural values, socioeconomic factors, and the administrative structure of these Nations.

4.7.2 Existing Collections

NAGPRA requires Federal agencies and Federally funded museums to inventory collections of human remains and certain cultural items in their possession or control, and identify the Federally recognized Indian tribes, and/or closest lineal descendants who are likely to be culturally affiliated with the human remains and cultural items. Furthermore, NAGPRA calls for these remains and cultural items to be made available for return to the respective Native groups or closest lineal descendants, if they so request. Federal agencies and Federally funded museums that want to return Native American human remains and cultural items to a non-Federally recognized tribe must formally request a review of a proposed disposition to the NAGPRA Review Committee. The summary, inventory, and repatriation of human remains and cultural items defined in NAGPRA will occur in accordance with NAGPRA (43 CFR §§ 10.5–10.7).

Currently, the collections resulting from archaeological investigations conducted at WFF contain no identified tribal human remains or other cultural item. Future projects should consider the need for NAGPRA compliance in case of inadvertent discoveries of Native American cultural items. If future investigations reveal the possibility of Native American sites being discovered, WFF will consult with the appropriate parties and follow the procedures outlined in Stipulations XII and XIII of the PA. WFF may consult with non-Federally recognized tribes that may be appropriate claimants for cultural items.

4.7.3 Intentional Excavations and Inadvertent Discoveries

Consultation with Federally recognized Indian tribes or other Native American organizations is required by NAGPRA when human remains or other cultural items (as defined in 25 U.S.C. § 3001) are found, or when a site of religious or cultural importance is found, during either intentional excavations or by inadvertent discovery on WFF property. To the extent possible, WFF will consult with the Catawba and Pocomoke Indian Nations early in the planning process. Consultation is undertaken to determine the cultural affiliation of human remains and specific cultural items, and to determine custody or disposition

of recovered items. In cases of intentional excavation or inadvertent discovery of human remains and cultural items on Federal lands, the procedures set out in Stipulations VII, VIII, XI, XII, and XIII of the PA will be followed.

4.7.3.1 Intentional Excavations

The following procedures should be followed for intentional excavations:

- Any planned excavations will be coordinated with the HPO;
- WFF will take reasonable steps to determine whether a planned activity may result in the excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony from WFF property;
- If identified remains or artifacts are to be excavated intentionally, WFF will proceed in accordance with Stipulations VII, VIII, XI, XII, and XIII of the PA;
- Prior to issuing any approvals or permits for activities not included under Stipulation III or Appendix G of the PA, WFF must notify in writing the Catawba Indian Nation and Pocomoke Indian Nation. 43 CFR §10.3(a) Notice must be in writing and must include a description of the planned activity, its general location, and the basis upon which it was determined that human remains or objects may be excavated. The notice must also propose a time and place for meetings or consultations to consider the proposed activity, and WFF's treatment and disposition of any remains or objects. Written notification should be followed by telephone contact if there is no response within 15 days;
- Consultation should address the manner and effects of proposed excavations, and the proposed treatment and disposition of recovered human remains and cultural items; and
- Following consultation, WFF must complete a written plan of action and execute its provisions.

4.7.3.2 Inadvertent Discoveries

In the event an inadvertent discovery is determined to be human remains, then the stipulations of Stipulation XIII, Human Remains, of the PA (**Appendix B**) will be implemented. If the remains are determined to be of Native American origin, then the HPO, in accordance with the procedures outlined in Stipulation XIII of the PA, will immediately notify the Catawba and Pocomoke Indian Nations and comply with the provisions of NAGPRA (refer to **Appendix G**). **Figure 4-2** illustrates the NAGPRA process.

4.8 PROCEDURE 7: AMERICAN INDIAN RELIGIOUS FREEDOM ACT COMPLIANCE

AIRFA promotes coordination with Native American religious practitioners on the effects of Federal undertakings upon their religious practices. Undertakings that alter or affect flora and fauna, viewsheds, artifacts, and sites that may be important to Native Americans may be covered under this legislation. WFF is not located on the present lands of any State or Federally recognized Native American tribe. As such, it is highly unlikely that compliance with AIRFA will be required for undertakings at WFF.

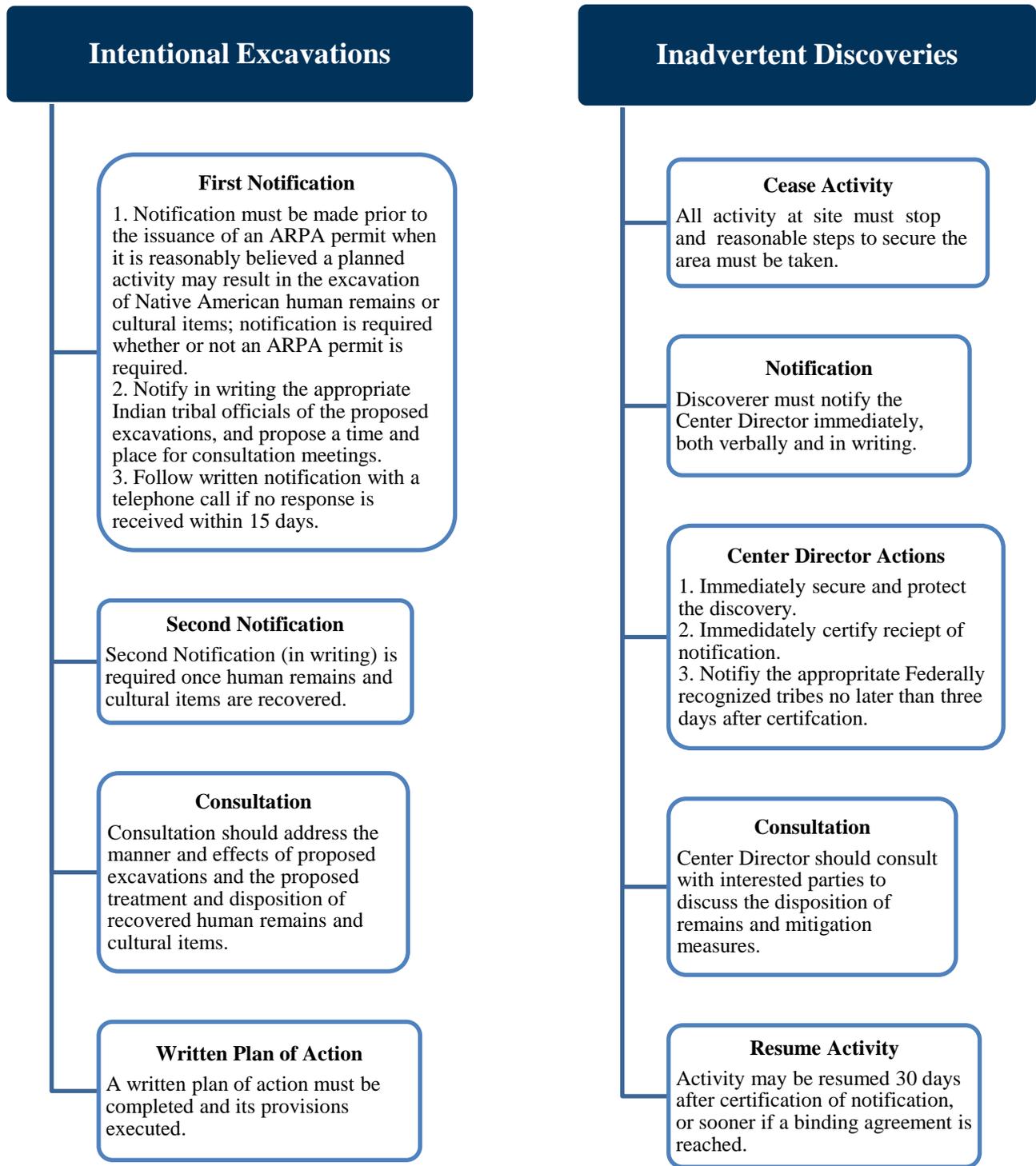


Figure 4-2. NAGPRA Process Flowchart

4.9 PROCEDURE 8: EMERGENCY PROCEDURES FOR UNEXPECTED DISCOVERIES OF ARCHAEOLOGICAL DEPOSITS

Archaeological or historical sites occasionally are discovered during construction projects, regardless of whether or not the project area has been subjected to a comprehensive cultural resources survey and inventory. Stipulation XII, Post Review Discoveries, of the PA outlines the procedures to follow in the event of post-Section 106 review discoveries of previously unidentified historic properties or unanticipated effects to historic properties.

4.9.1 Discovery of Human Remains

Discovery of human remains, of whatever nature, is a serious archaeological issue. In Virginia, human remains cannot be disturbed without a permit from the VDHR (Code of Virginia 10.1-2305). Unauthorized excavation of human remains is a misdemeanor crime under the Code of Virginia, and is a felony crime on Federally owned lands.

If any human remains are unexpectedly discovered at WFF and the remains are determined to be of Native American origin, then the HPO must follow the provisions in Stipulation XIII, Human Remains, of the PA (refer to Procedure 7 for additional information). If the remains are determined not to be of Native American origin, the procedures set forth in Stipulation XIII, Human Remains, of the PA should be implemented in addition to following these steps:

1. Stop work immediately.
2. Contact the HPO.
3. Notify the VDHR and the Virginia State Police.

4.10 PROCEDURE 9: CURATION OF ARTIFACTS

Archaeological collections include the artifacts recovered from archaeological sites, the documentary records pertaining to the excavations, and the final report. These records may include photographs, field data records and drawings, maps, and other documentation generated during the conduct of the project. Per the stipulations of Stipulation XI, Curation, of the PA (**Appendix B**), WFF will deposit archaeological materials and appropriate field and research notes, maps, and drawing and photographic records collected as part of either intentional archaeological investigations or from unexpected discoveries with a facility that meets the requirements in 36 CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collections* (refer to Section 3.2.1.9), to ensure stable long-term storage of the materials. In the case of WFF, VDHR has agreed to curate archaeological resources for the facility. Additionally, NASA has an existing Agreement with the Smithsonian Institution regarding the transfer and management of artifacts having such historical and educational or other value that have emerged and will emerge from the aeronautical and space programs administered by NASA.

The initial processing of material remains, including appropriate cleaning, sorting, labeling, cataloging, stabilizing, and packaging, should be completed by personnel meeting the professional qualifications established in 36 CFR Part 61. Additional rules and regulations are outlined in 36 CFR Part 79 and in the “Guidelines for Conducting Historic Resources Survey in Virginia” (VDHR 2011a).

4.11 PROCEDURE 10: EMERGENCY PROCEDURES FOR ARCHITECTURAL RESOURCES

The provisions of Stipulation IX, Emergency Actions, of the PA (**Appendix B**) outline procedures to follow for emergency actions that may be necessary in direct response to an emergency situation that has the potential to affect historic properties at WFF. These procedures should be implemented in addition to the following requirements:

- Emergency actions will be initiated as required by the situation. Emergencies are those disasters or emergencies declared by the President of the United States or the Governor of the Commonwealth of Virginia, or other immediate threats to life or property as determined by the NASA WFF Director. Examples of emergency situations include fire, flood, and acts of nature, such as falling trees or hurricanes. Appropriate emergency personnel, including fire and police, should be contacted.
- The HPO should be informed of the emergency as soon as possible and determine whether or not there is appropriate time to consult with the SHPO prior to undertaking emergency actions. If there is time to consult with the SHPO prior to addressing the emergency situation, the HPO, in conjunction with the SHPO, will determine the appropriate emergency actions. The SHPO will have a seven-calendar-day review period to provide comments regarding the emergency actions. Should the SHPO fail to provide comments, the HPO will implement the emergency actions.
- If there is not time to consult, the HPO will review emergency stabilization measures undertaken to protect the historic property and to preserve its historic fabric and features. In general, emergency stabilization measures include short-term and reversible repairs that do not harm historic fabric or features.
- The HPO will inform the SHPO of the nature of the emergency affecting historic properties and of the stabilization measures that have been implemented within five calendar days after the initiation of the emergency action.
- Once the building has been stabilized, the HPO will initiate permanent repairs to be carried out in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* (USDI 1995).
- The HPO will coordinate necessary review of the proposed permanent repairs with the SHPO, following Procedure 2, Section 106 Compliance.

4.12 PROCEDURE 11: DEMOLITION OF HISTORIC BUILDINGS

In accordance with Stipulation V, Planning for the Wallops Beach Life Saving Station, of the PA, if the proposed disposition of the Life Saving Station (VDHR #001-0027-0100) and associated Observation Tower (VDHR #001-0027-0101) is demolition or dismantling, NASA will provide the documentation specified in Stipulation V.E.6-7 of the PA and will develop a short documentary video of the history of the Wallops Beach Life Saving Station and Observation Tower. In the future, if other buildings are identified as historic properties, the WFF HPO will follow the stipulations listed in Stipulation VIII, Resolution of Adverse Effects, of the PA.

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5.0 PRESERVATION GUIDANCE

5.1 INTRODUCTION

This section specifies current condition issues and detailed maintenance suggestions for the Wallops Beach Life Saving Station (VDHR #001-0027-0100) and Observation Tower (VDHR #001-0027-0101), the only National Register-eligible architectural resources at WFF to date. Further details regarding planning for the Wallops Beach Life Saving Station and Observation Tower can be found in Stipulation V of the PA (**Appendix B**).

In June 2005 an architectural historian and historical architect were contracted by WFF to conduct on-site inspections of the Wallops Beach Life Saving Station (VDHR #001-0027-0100) and Observation Tower (VDHR #001-0027-0101) for the purpose of assessing conditions, recommending any corrective measures, and creating a building maintenance plan. Because the Life Saving Station and Observation Tower have been determined eligible for listing in the National Register (refer to Section 2.5.3), NASA is required under Section 110 and Executive Order 11593, Protection and Enhancement of the Cultural Environment, to take steps to preserve and maintain these historic properties. A preservation and maintenance plan was developed to provide NASA staff with an overall approach to prioritizing building maintenance needs for stabilization and thwarting further deterioration (**Appendix I**). Technical specifications for particular maintenance and stabilization techniques appropriate to the building components and historic building fabric are readily available in numerous monographs and technical guides developed by other Federal agencies such as, but not limited to, the General Services Administration's (GSA) Historic Preservation Technical Procedures, available at <http://www.gsa.gov/portal/hp/hpc/category/100371/hostUri/portal>, and the NPS series of technical preservation briefs, available at <http://www.nps.gov/tps/how-to-preserve/briefs.htm>.

NASA has not been actively utilizing or occupying the Wallops Beach Life Saving Station (VDHR #001-0027-0100) since about 1999. Asbestos and lead paint abatement at the Wallops Beach Life Saving Station was completed in 2008. The Wallops Beach Life Saving Station has been mothballed according to NPS standards since 2009, thereby protecting and securing this historic property from further deterioration. As stipulated in Stipulation V of the PA, NASA will continue to inspect and maintain the Life Saving Station and Observation Tower in accordance with the NPS Preservation Brief 31, Mothballing Historic Properties, for as long as the property remains in the possession of WFF.

The 2005 on-site inspections included examining and evaluating the Life Saving Station's roof, drainage system, exterior walls, windows, doors, and building interiors. For the Observation Tower, the overall steel structure was inspected and evaluated. Copies of the Life Saving Station's floor plans are included in **Appendix J**.

5.2 CONDITION ISSUES OF THE WALLOPS BEACH LIFE SAVING STATION (VDHR #001-0027-0100) AND OBSERVATION TOWER (VDHR #001-0027-0101)

The following observations and notes were gathered during the 2005 on-site inspections, and were predicated upon a treatment method that aimed to stabilize the historic fabric and character-defining features as outlined in the Secretary of the Interior's *Standards for the Treatment of Historic Properties* (36 CFR Part 68). In essence, stabilization here means the process of taking measures to protect and

preserve each historic property. As such, these efforts generally focused upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. For more detailed information on this preservation treatment method, please refer to the commonly accepted definition offered by the NPS and available online at <http://www.nps.gov/tps/standards/four-treatments/treatment-preservation.htm>.

A brief discussion of each of the various conditions of materials and building components noted during the 2005 inspection is provided below and has been updated to reflect current conditions. Where removal of materials has occurred since 2005 and been documented by WFF, those changes have been noted in the description.

5.2.1 Life Saving Station (VDHR #001-0027-0100)

5.2.1.1 Exterior

Roof

The main roof consists of a simple gable structure, whose ridge is oriented parallel with the primary east façade (**Figure 5-1**). The shorter north and south façades of the building form the gable ends (**Figure 5-2**). The roof pitch is approximately 2/3, or 35 degrees, as measured in the attic. The eaves are accentuated by a continuous box cornice that projects several inches from the plane of the gable and connects with a similarly detailed box soffit and fascia that caps the east and west walls, just below the first course of shingles. The roof shingles have a 6-inch exposure to the weather, are untreated, but are in relatively good condition, with the exception of occasional areas of warping and discoloration from paint and metal staining. Both the east and west roof portions are punctuated by three symmetrically placed dormers. All six dormers are similar in configuration, size, and materials. Each has a gabled roof of similar slope to the main roof they abut. On each, a more delicately scaled box cornice along the gable eaves meets a similarly configured bowed cornice along the dormer cheek walls. All window sashes are double-hung, six-over-six light units. Each appears to be in relatively good condition.

A similarly shingled shed roof covers the front entry porch (**Figure 5-1**). This roof has a gutter running along its base and terminates at the south side into a corrugated, 3½-inch square, vinyl coated rain water leader. The shingles are well worn, showing a raised grain. The only other roof is the small projecting gable located over the north side door and supported by diagonal brackets (**Figure 5-1**). The condition of this roof also appears to be worn, but satisfactory.

The chimney stack and cap are in fair condition, with minimal weathering of the brick and of the mortar joints. From ground observation, no bricks appeared loose or missing.

Drainage Systems

At the base of the roofline, a copper gutter runs along the primary (east) façade, around to the north and rear (west) elevations. There is no gutter along the south elevation, perhaps in deference to a desired architectural homogeneity of the three-part elevational composition (**Figure 5-2**). There is now only one rainwater leader along the rear elevation. On the north elevation a rainwater leader has long since been removed, although a copper scupper and the accentuated deterioration of shingles below clearly indicate its original location. Replacement of this leader with a prefabricated 4-foot unit is an immediate imperative because it will retard future deterioration of the shingle siding by the concentration of water



Figure 5-1. Wallops Beach Life Saving Station (VDHR #001-0027-0100), East Façade and North Elevation, January 2010



Figure 5-2. South Elevation, January 2010

flowing through the scupper. Adding splash blocks to the bottoms of the leaders is an advisable way of diverting concentrated storm water flow away from the base of the foundation walls.

Lightning Protection System

The building does not include a complete lightning protection system. Typically, such a system consists of a rod or pole attached to the highest element of a building, connected to a heavy gauge, stranded copper wire, mounted and run down the building to a point several feet away and terminating in a pole driven into the earth for grounding. Evidence of a former grounding cable was northeast of the building, but its integrity could not be ascertained.

Shingle Siding

The building is clad entirely in uniformly coursed cedar shingles, with a 5½- to 6-inch exposure. Although previously painted white, the shingles no longer retain any paint due to the removal of all lead-based paint in 2008, exposing the grains. The shingles are rippled or warped in some areas and/or cracked at the edges. Weathering is most severe on the south and east elevations (**Figures 5-1 and 5-2**).

Windows and Exterior Doors

All doors and windows were removed from the building and placed into storage in October 2008 for lead paint abatement and the existing openings covered in plywood in accordance with mothballing procedures. The predominant window unit type is a six-over-six light, double-hung sash. Windows were in fair condition, with only an occasional unit showing broken or missing glazing and or glazing compound. Most were fully operable and contained the original lead counter weights. Basement windows consist predominantly of three-over-three light, double-hung units. Attic sash consist of six double-hung dormer units as described earlier as well as two gable end lunettes or half round, three fixed light units.

The two front doors off the porch each comprise three raised panels with a fixed three-over-three light above (**Figure 5-3**). A similarly configured wood door provided access to the north side of the house. All three doors were in good condition, despite excessively peeled paint. Inset to the west foundation wall was a pair of small doors, each door with three fixed lights over a rectangular raised panel (**Figure 5-4**). Because they are so wide relative to their height, the doors were attached to their jambs with broad strap hinges.

Foundations

Foundation walls on the north, south, east, and west sides consist of cast-in-place concrete. The foundation walls are exposed and project 3 to 4 feet above grade to form an English basement, upon which the first floor framing and shingle cladding begin. Approximately 3 feet below the first course of shingles, just above grade, the foundation walls project outward approximately 8 inches so that the wall is thicker as it enters the earth. The foundation walls exhibit remnants of white paint.



Figure 5-3. Center Door, East Elevation, June 2005



Figure 5-4. Detail View of West Elevation, June 2005

Front Porch

The raised front porch is a single bay deep by three bays across, and is symmetrically appended to the east elevation of the house. The bays are defined by square pilasters, fashioned from stock 1 x 8-inch boards. At the outside corners the columns are tripled and at the sides, abutting the house, the pilasters are engaged to the shingle wall. A 2-inch galvanized pipe rail forms the handrail and balustrade of the porch. An open riser stair with worn and warped treads forms the primary stair connecting the porch to the lawn. The open bays below the porch deck, on either side of the stair, are trimmed out in stock lattice panels. While well worn, the porch appears to be structurally sound. Information on conducting a detailed inspection of the porch can be found in GSA's (2006) Historic Preservation Technical Procedures, Standard 01091-11, *Guidelines for Rehabilitating Historic Buildings: Entrances and Porches*.

5.2.1.2 Interior

Attic Framing

The attic is accessed by a pull-down stair located in the ceiling of the second floor corridor (**Figure 5-5**). It consists of entirely unfinished space, although there is a diagonally laid tongue and groove subfloor throughout. Areas of flooring below dormer windows are warped, suggesting that windows may have been left open on more than one occasion, resulting in water damage. The structure reveals a standard twentieth century American framing technique whereby all members are of uniform size and spaced 16 inches on center. At all dormer openings, rafters are doubled up for added lateral stability (**Figure 5-6**). Added structural stability for the roof rafters is achieved through the use of collar beams one-third of the way down the slope. There is no insulation between the studs of the gable wall, nor is there any between the roof rafters. This has probably permitted the otherwise contained area to “breathe” over the decades. Therefore, the overall condition of the materials is relatively good, other than the previously noted floor board damage.



Figure 5-5. Attic, View Looking North, June 2005



Figure 5-6. Typical Dormer Construction, June 2005

Plaster Surfaces

The surfaces of the walls of the first and second floor rooms originally featured paint on plaster (**Figures 5-7 and 5-8**); however, in 2008, all plaster was removed from the walls as part of lead paint and asbestos abatement. Each wall was outfitted with what appeared to be an original chair rail of the simplest, rectangular section. However, as part of the lead paint abatement, all trim in the building was removed and placed into storage.



Figure 5-7. North Wall of Mess Hall, June 2005



Figure 5-8. Second Floor Corridor, January 2010

Interior Doors

As with the exterior doors, all interior doors were removed from the building and placed into storage as part of the lead paint abatement. Interior doors are typically solid core, stile and rail construction with five raised similar, horizontally arranged panels. Most of the doors exhibited functional, usually original, hardware (handsets, hinges, strike plates, etc.).

Specialties

The staircase connecting the first and second floors is semi-enclosed; it begins immediately south of the front door and turns 90 degrees by use of three winders (**Figure 5-9**). It has an open stringer. The small exposed banister consists of 1-inch square balusters and a simple, 4 x 4-inch newel post. Paint was removed from the stair components for the lead paint abatement project in 2008. The staircase is in fair to good condition.



Figure 5-9. Stair to Second Floor, June 2005

Below the corridor stair is a fully enclosed stair to the basement. This stair could not be viewed to determine its condition. Another stair to the basement is located along the north wall, at the rear of the kitchen (**Figure 5-10**). This fully enclosed stair has a landing adjacent to an exterior door, which was removed in 2008 for lead paint abatement. It is in good to fair condition.



Figure 5-10. Kitchen Stair to Exit and to Basement Below, June 2005

Full height custom cabinetry units and shelving can be found in the former mess hall and kitchen pantry (**Figures 5-11 and 5-12**). The pantry also has built in, fixed wood shelving. The southeast chamber on the first floor also has a full height custom cabinet. Lead paint was removed from the cabinets and shelves as part of the 2008 abatement project. Overall, these units appear to be in good condition. Notably, the kitchen and mess hall units contain all the original glazing in the upper cabinet doors.



Figure 5-11. China Cabinet in Mess Hall, June 2005



Figure 5-12. China Cabinet and Shelves in Pantry, June 2005

The basement level boiler room equipment (**Figure 5-13**), as well as extant floor tile and pipe wraps, were all surveyed and tested for asbestos by certified industrial hygienists, and all samples came back positive for asbestos-containing materials. Consequently, the floor tile, pipe and pipe fitting insulation, boiler breaching insulation, and tank insulation from the boiler room equipment were removed as part of the asbestos abatement project in 2008.



Figure 5-13. Boiler Detail – Basement Level Boiler Room, June 2005

5.2.2 Observation Tower (VDHR #001-0027-0101)

The Observation Tower (VDHR #001-0027-0101) was specified to be constructed of galvanized structural steel sections, composed primarily of 4 x 4-inch angle sections (**Figures 5-14 and 5-15**). The tapered tower sits on concrete foundations, from which it rises to a height of 37'-6". The four 4'-6" deep foundation walls taper as they rise out of the ground and are connected to the tower legs by anchor bolts.

Following standard U.S. Coast Guard design guidelines, structural steel members were field connected with bolts with lock washers under each nut. A steep scissors stair or series of superimposed ship-ladders provide access up to the observation platform. The structural edges of the platform consist of 7-inch channels. The platform is about 14feet square, overhanging the angle supports below by 2'-10" on all four sides.

The overall condition of the tower is fair. The majority of the surfaces are covered with a fair amount of surface rust. It did not appear that any areas were so severely rusted as to adversely affect their structural integrity. Because of their cleaner condition, it appeared that certain members are newer stainless steel replacements.



Figure 5-14. General View of Observation Tower (VDHR #001-0027-0101), June 2005



Figure 5-15. Observation Tower (VDHR #001-0027-0101) looking Southwest, January 2010

5.3 MAINTENANCE AND REPAIR RECOMMENDATIONS

These recommendations are presented in order to suggest ways to minimize the natural deterioration that occurs over time and by weathering of historic fabric and character-defining features for the Wallops Beach Life Saving Station (VDHR #001-0027-0100) and Observation Tower (VDHR #001-0027-0101). Because NASA is not using either structure, the proceeding recommendations are being made in consideration of a mothballing or stabilization effort until their future use can be determined.

For further information on specific conditions or surfaces, maintenance staff should consult *Well-Preserved* (1992) by Mark Fram and *Conserving Buildings* (1997) by Martin E. Weaver. Also consult the NPS website at http://www.cr.nps.gov/hps/tps/standguide/preserve/preserve_index.htm.

A summary matrix of suggested tasks to aid NASA in its role as historic property steward is located in **Table 5-1**. All deferred maintenance and repairs should be conducted in strict accordance with the Secretary of the Interior's Standards for Preservation and Guidelines for Preserving Historic Buildings (http://www.nps.gov/tps/standards/four-treatments/standguide/preserve/preserve_index.htm). The express goal of this treatment method, as defined by the NPS, is "the retention of the building's existing form, features and detailing...protection, maintenance and repair are emphasized while replacement is minimized" (USDI 1995:19).

As stipulated in Stipulation V, Planning for the Wallops Beach Life Saving Station, of the PA, actions providing for the preservation of the building in-place in accordance with the Secretary of the Interior's Standards, will have no adverse effect on historic properties and no further compliance with Section 106 will be necessary. However, it is important to note that any other treatment method or action on the part of staff, no matter how well intended, could constitute an "undertaking" potentially affecting one or both National Register eligible historic properties, thereby triggering SHPO involvement under Section 106.

While additional training for maintenance staff on the proper care and treatment of historic buildings is not currently recommended, it should be noted that the U.S. Army Corps of Engineers, Seattle District, Technical Center of Expertise for the Preservation of Historic Buildings and Structures offers field schools at multiple skill levels on the topic. This group also provides guidance and support to Federal agencies with historic structures.

A maintenance task schedule has been produced to facilitate scheduling of activities for WFF operations staff. This schedule or scheduled activities checklist accompanies the maintenance narrative that follows.

5.3.1 Landscaping and Vegetation

Landscaping and vegetation should be kept away from the building in order to prevent both moisture damage and structural damage that might occur from roots and climbers working their way into the wood grains.

The ground around the base of the buildings should be graded so that water drains away from the building. When pruning plants and shrubs, the vegetation should be cut away from the building. Ivy and other vines should not be allowed to grow on the buildings. They should be carefully removed from the wall surface in order to prevent damage to the wood and concrete surfaces.

Table 5-1. Summary Matrix for the Life Saving Station (VDHR #001-0027-0100)				
	URGENCY			
	Near-Term	Long-Term	As Required	Notes
Maintenance Tasks By Area				
Exterior				
Design lightning protection system		•		Do not reuse existing; SHPO consultation
Install lightning protection system	•			SHPO consultation
Inspect roof shingles for attachment and excessive warping/cracks	•	•		
Replace roof shingles in kind		•	•	SHPO consultation
Verify continuity of all flashing at chimney and valleys and roof/wall junctures	•			
Make necessary flashing and counter flashing repairs		•	•	SHPO consultation
Inspect gutters, gutter straps and methods of attachment	•	•	•	
Attach rainwater leader to scupper replacement on north side	•			SHPO consultation
Furnish and install 48-inch horizontal leader extenders		•		
Engage professional to remove all birds', bees', hornets', and wasps' nests	•			
Professional repair of all holes/damage to wood envelope made by pests		•		SHPO consultation
Inspect all shingles for attachment, excessive warping, and checking	•			
Replace cedar shingles in kind		•	•	SHPO consultation
Inspect all window glazing for lead content	•			
Produce plan for removal of all loose, cracked, and deteriorated lead containing window glazing compounds		•		SHPO consultation
Remove all lead containing window glazing compounds and replace with non-hazardous glazing compounds		•		
Engage pest control specialist to prevent entry of rodents, reptiles, birds, and other animals	•			
Create plan to monitor the buildings on a regular basis		•		Formalize the currently informal inspections
Interior				
Engage pest control specialist to prevent entry of rodents, reptiles, birds and other animals	•			

Table 5-1. Summary Matrix for the Life Saving Station (VDHR #001-0027-0100)

Maintenance Tasks By Area	URGENCY			Notes
	Near-Term	Long-Term	As Required	
Remove all non-fixed equipment and furnishings and dispose of properly		•		SHPO consultation
Broom clean interiors to remove accumulated dirt, debris, and animal droppings			•	
Evaluate cost/benefits of installing smoke alarms with a remote sensing and notification system		•		

Note: Annual maintenance plans can be reviewed as a group based on brief letter to the Virginia SHPO describing intended approach to each item.

5.3.2 Drainage Systems

The missing downspout on the north side of the structure should be replaced. This should be an “in kind” replacement with a round copper rainwater leader. If this cannot be accomplished, replacement should then utilize a properly sized rainwater leader for the entire length from the scupper down to the ground. Rainwater leader horizontal extension pipes (48-inch minimum length) should be added in order to divert all storm water from the base of the building.

Joints should be properly constructed and inspected frequently, especially during and after heavy rains to ensure that the joints remain intact. In no case should a downspout be allowed to end before reaching the ground. At the end of each downspout, the ground should be graded to direct water away at least 2 feet from the building foundation. If necessary, cast concrete channels can be used to help direct the water flow.

Inspectors should verify that all horizontal gutters are not crimped, are not punctured, have been cleaned of all debris, are adequately attached to the structure, are sufficiently sloped, and are able to adequately convey water for their entire run. If not, make necessary repairs with copper nails.

Inspectors should also verify that the scupper on the north side functions properly. If it cannot function properly, remove and place inside the house in an adequately sized crate which is clearly labeled with the name of the component and the date it was removed.

5.3.3 Brick and Mortar

Careful inspection of the chimney bricks and mortar should be scheduled to insure that no individual bricks are loose or likely to separate from the surrounding mortar. If any bricks are loose, schedule repointing for a time when temperatures are above 50 degrees Fahrenheit by an experienced mason using a mortar mixture that has a low cement content and is compatible with the existing mortar in texture and appearance. All mortar joints should be tuckpointed to match the original tooling methods still seen on parts of the building. If necessary, the chimney may need to be reconstructed due to the high degree of mortar loss. In such cases, the original bricks should be cleaned and reused in the reconstruction of the chimney.

5.3.4 Concrete

No specific actions are required at this time. For more detailed discussions of repairing historic concrete see NPS Preservation Brief No. 15, Preservation of Historic Concrete, Problems and General Approaches, available online at <http://www.cr.nps.gov/hps/tps/briefs/brief15.htm>.

5.3.5 Shingles

In the future, care should be taken to avoid further damage to the shingled surfaces due to both vegetation and water damage. Vegetation should be kept clear of the building, and in particular, the vines should be removed from the wall surfaces. The drainage system should be kept in good repair and the water drained away from the building in order to minimize damage. For more detailed maintenance procedures affecting shingled surfaces see the GSA's Historic Preservation Technical Procedures, Guidelines for Rehabilitating Historic Buildings: Wood, available online at <http://www.gsa.gov/portal/content/112194>.

5.3.6 Pest Control

All points of entry need to be blocked in order to prevent further entry by pests seeking shelter from the elements. Therefore, all broken or missing window sash should be replaced, and loose sash should be re-glazed.

The advice of specialized pest control and/or exterminator service familiar with the climate and animals of Wallops Island should be consulted. All pest debris (e.g., carcasses, excrement) should be removed and properly disposed as these can pose serious health hazards.

5.3.7 Structural Steel

Structural steel members of the Observation Tower (VDHR #001-0027-0101) require visual monitoring. If any connections appear to be loose or failing, consult a licensed structural engineer for designing suitable repairs. Consider installing a gate to limit access only to authorized staff.

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