

**Environmental Impact Statement/  
Overseas Environmental Impact Statement**

**Point Mugu Sea Range**

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### **3.10 Cultural Resources**

#### **3.10.1 Introduction**

This section describes cultural resources found within the Point Mugu Sea Range (PMSR) that could be impacted as a result of the implementation of the Proposed Action. Cultural resources are found throughout the PMSR Study Area, both on land at Naval Base Ventura County (NBVC), Point Mugu and San Nicolas Island (SNI), as well as at sea within the PMSR operational areas. Because the Proposed Action would not affect onshore cultural resources at Port Hueneme, or San Miguel, Santa Rosa, Santa Cruz, Anacapa, or Santa Barbara islands, these areas are not evaluated further for impacts to cultural resources.

Cultural resources are defined as sites, buildings, structures, objects, and districts, as well as other physical evidence of human activity, that are considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources include archaeological resources, architectural resources, sacred sites, and traditional cultural properties (TCPs).

Archaeological resources are the material remains of past human life or activities, and can have a surface component, a subsurface component, or both. Common types of archaeological resources found in the PMSR include village/habitation sites (shell middens), lithic scatters, refuse scatters, roasting pits and hearths, petroglyphs/pictographs, cemeteries, building foundations, cisterns, privies, and ship or aircraft wreck sites.

Architectural resources are elements of the built environment consisting of standing buildings or structures such as dams, bridges, lighthouses, forts, and others. Indigenous architectural resources in the PMSR also include mounded village sites on the Northern Channel Islands.

TCPs are resources associated with beliefs or cultural practices of a living culture, subculture, or community. These beliefs and practices must be rooted in the group's history and must be important in maintaining the cultural identity of the group. Prehistoric, historic, and/or contemporary locations of traditional events; sacred places; landscapes; and resource collection areas, including fishing, hunting, and gathering areas are examples of potential TCPs.

Underwater archaeological resources can take the form of submerged archaeological sites; or can be submerged shipwrecks or aircraft, or pieces of ship components, such as cannons or guns.

#### **3.10.2 Region of Influence**

For purposes of this Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), the region of influence (ROI) for cultural resources includes the PMSR within 12 nautical miles (NM) of land and the areas of potential effect (APE) associated with activities from land-based facilities on NBVC Point Mugu and SNI (Figure 3.10-1 and Figure 3.10-2). As noted above, because the Proposed Action would not affect onshore cultural resources at Port Hueneme, or San Miguel, Santa Rosa, Santa Cruz, Anacapa, or Santa Barbara islands, they are not evaluated further.

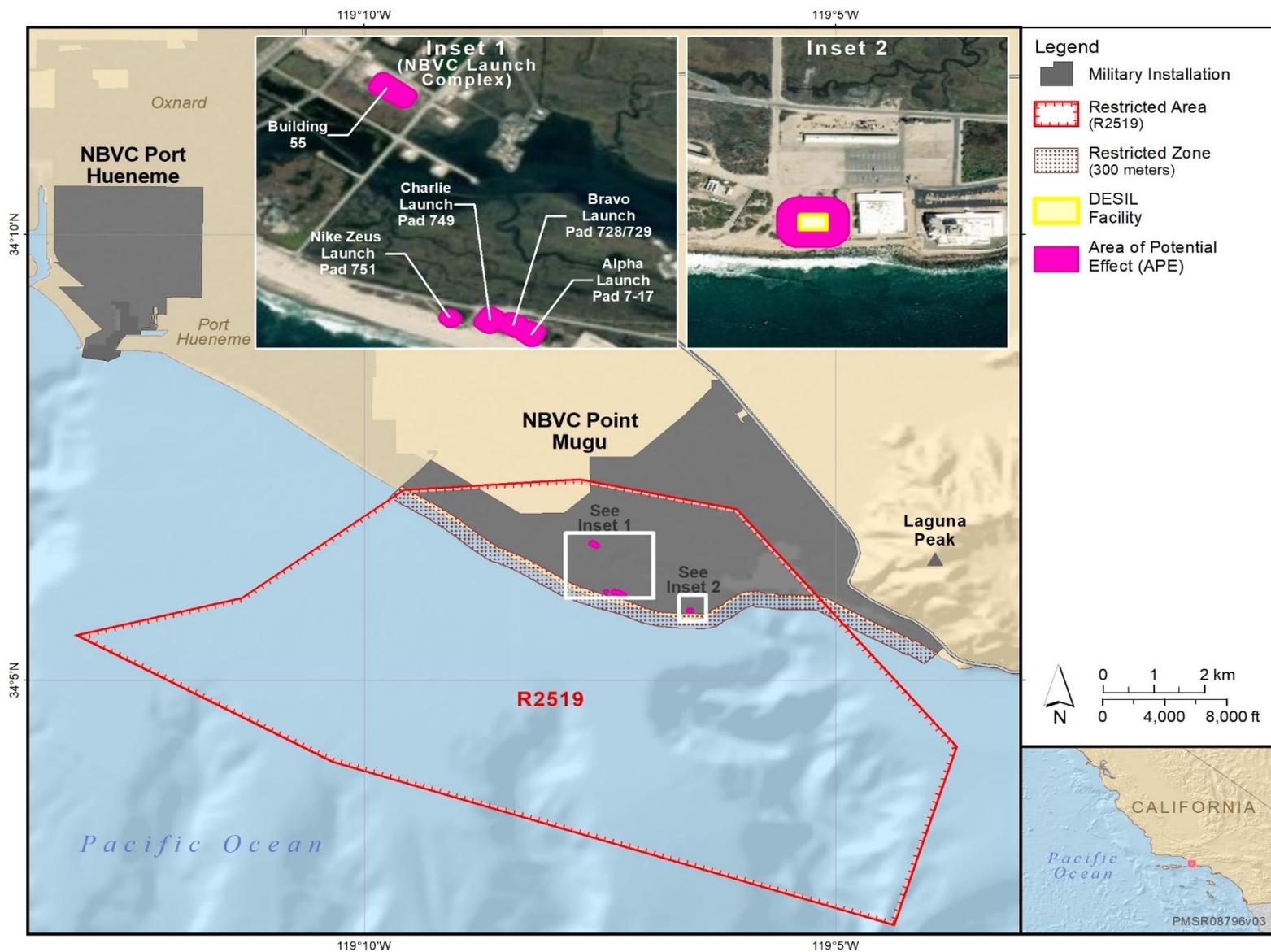


Figure 3.10-1: Areas of Potential Effect at NBVC Point Mugu

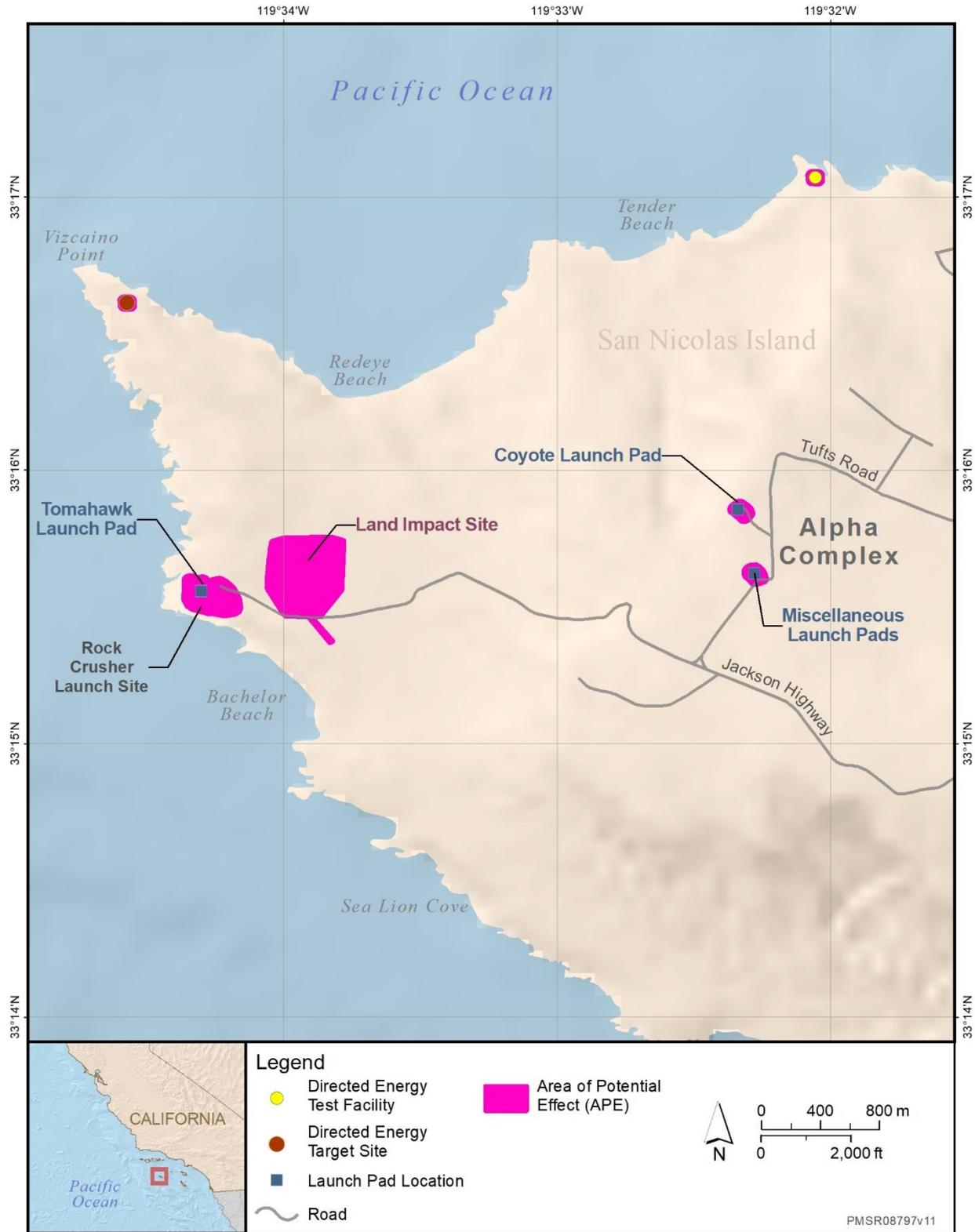


Figure 3.10-2: Areas of Potential Effect at San Nicolas Island

### 3.10.3 Identification, Evaluation, and Treatment of Cultural Resources

Procedures for identifying, evaluating, and treating cultural resources on land and within state territorial waters (within 3 NM of the coast) and United States (U.S.) territorial waters (within 12 NM of the coast) are contained in a series of state and federal laws and regulations, and agency guidelines. Cultural resources, including both archaeological and architectural resources, are protected by a variety of laws and their implementing regulations: the Antiquities Act of 1906; the National Historic Preservation Act (NHPA) of 1966, as amended in 2016; the Archeological and Historic Preservation Act of 1974; the Archaeological Resources Protection Act of 1979; the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA); the American Indian Religious Freedom Act of 1978; the Abandoned Shipwrecks Act of 1988; and the Sunken Military Craft Act of 2004. “Historic properties” are a subset of cultural resources that are defined in the NHPA (54 United States Code [U.S.C.] section 300308) as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property or resource.

Section 106 of the NHPA, currently codified in 54 U.S.C. 306108, requires Federal agencies to consider the effects of their actions on historic properties listed in or eligible for inclusion in the NRHP. The regulations implementing Section 106 (36 Code of Federal Regulations [CFR] Part 800) specify a consultation process to assist in satisfying this requirement, including efforts to identify and assess effects to historic properties. For the Proposed Action, consultation with the California State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation, Indian tribes, the public, and other interested parties is required by Section 106 of the NHPA. For purposes of this EIS/OEIS, Indian tribe means an Indian tribe, band, nation, or other organized group or community, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians (36 CFR Part 800.16 (m)). Consultation with Indian tribes is conducted on a government-to-government basis with federally recognized tribes, as reaffirmed by Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*.

Consistent with the provisions of NHPA and 36 CFR 800.14(b), a Programmatic Agreement was developed to govern the implementation of routine activities occurring at NBVC Point Mugu. The 2015 Programmatic Agreement is between the Commanding Officer, NBVC, and the California State Historic Preservation Officer regarding Navy Undertakings within Ventura County, California (U.S. Department of the Navy, 2015). The Programmatic Agreement allows the U.S. Department of the Navy (Navy) to consult with interested parties and stakeholders on a program of management and reporting that substantially reduces the burden of consultation on routine individual or repetitive undertakings; however, this Programmatic Agreement does not apply to undertakings occurring at SNI or at sea.

In the event of an inadvertent discovery, the Navy follows the procedures established under NAGPRA (implementing regulations 43 CFR Part 10) and Chief of Naval Operations Instruction 11170.2B (*Navy Responsibilities Regarding Undocumented Human Burials*). Recognizing the potential for encountering Native American graves within the Land Impact Site on SNI, the Navy will also consult with culturally affiliated and federally recognized tribes to develop a NAGPRA Plan of Action to address the potential discovery of NAGPRA cultural items.

Procedures for identifying and protecting terrestrial cultural resources have been developed for NBVC Point Mugu and SNI as described in the Integrated Cultural Resources Management Plans (ICRMPs) for

NBVC Point Mugu and SNI (U.S. Department of the Navy, 2018a). The SNI ICRMP also contains guidance and standard operating procedures for complying with the NHPA and NAGPRA.

Additional regulations and guidelines for submerged historic resources include 10 U.S.C. section 113, Title XIV for the Sunken Military Craft Act; the Abandoned Shipwreck Act Guidelines prepared by the National Park Service (National Park Service, 2018); and, for the purposes of conducting research or recovering Navy ship and aircraft wrecks, the Guidelines for Archaeological Research Permit Applications on Ship and Aircraft Wrecks under the Jurisdiction of the Department of the Navy (36 CFR Part 767) and overseen by the Naval History and Heritage Command. The Sunken Military Craft Act does not apply to actions taken by, or at the direction of, the United States. In accordance with the Abandoned Shipwrecks Act of 1988, abandoned shipwrecks in state waters are considered the property of the U.S. government if the shipwreck meets the criteria for inclusion in the National Register.

No specific procedures for identification and protection of cultural resources in the open ocean (i.e., typically an area more than 12 NM from shore) have been defined by the international community (Zander & Varmer, 1996). No treaty offering comprehensive protection of submerged cultural resources has been developed and implemented. However, a few international conventions prepared by the United Nations Educational, Scientific, and Cultural Organization apply to submerged cultural resources, including the 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property; the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage; the 1982 Convention on the Law of the Sea; and the 2001 Convention on the Protection of the Underwater Cultural Heritage. Only the 1970 and 1972 conventions have been fully ratified by the United States.

#### **3.10.4 Approach to Analysis**

There are no proposed construction-related activities; therefore, the approach to analysis focuses on potential impacts from military readiness activities on submerged resources at sea within the PMSR and on terrestrial cultural resources that occur within the APEs for NBVC Point Mugu and SNI.

Anti-surface missiles and projectiles exploding at or near the water surface (less than 10 m above the surface) would produce vibrations over areas of deep water; these vibrations would dissipate before they reached cultural resources on the seafloor and will not be considered further (U.S. Department of the Navy, 2018b).

Sonic booms generated by supersonic aircraft overflights associated with the Proposed Action occur in areas beyond 15 NM from shore. Impacts to cultural resources from sonic booms generated by overflights will not be considered further, as they occur outside of the Study Area (U.S. territorial waters).

Within U.S. territorial waters (within 12 NM of the coast and islands), the National Environmental Policy Act (NEPA) is the guiding mandate. Areas beyond 12 NM in the open ocean will not be analyzed because data beyond 12 NM are not associated with any state, and there are no SHPO consultation requirements.

The method for determining at sea and terrestrial impacts consists of analyzing potential effects to known cultural resources from military expended material (MEM) (target and weapons debris), use of a land-based target area, land-based launch activities, and impulsive noise associated with land-based launch activities.

Regulation 36 CFR Part 800 requires federal agencies to take into account the effects that an undertaking may have on historic properties included on or eligible for inclusion on the NRHP. Historic

properties that have not been formally evaluated for the National Register may be considered potentially eligible, and thus are afforded the same regulatory consideration as resources listed on the NRHP. Identification and evaluation of historic properties within the PMSR are the responsibility of the Federal agency in consultation with the California SHPO and Indian tribes that may attach religious and cultural significance to historic properties that may be affected.

Properties are evaluated for nomination to the National Register and for National Register eligibility using the following criteria (36 CFR section 60.4(a)–(d)):

- Criterion A: Association with events that have made a significant contribution to the broad patterns of American history
- Criterion B: Association with the lives of persons significant in the American past
- Criterion C: Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D: Yield, or may be likely to yield, information important in prehistory or history

A historic property must also possess the following aspects of integrity: location, design, setting, materials, workmanship, feeling, and association to convey its significance to qualify for the National Register. These seven aspects, in various combinations, define integrity. To retain integrity, a property will always possess several, and usually most, of these aspects.

#### 3.10.4.1 Data Sources

Cultural resources information relevant to this EIS/OEIS was derived from a variety of available sources, including previous environmental documents and reports; information provided by tribes; national and international shipwreck databases; data held by the Underwater Archaeology Branch of the U.S. Naval History and Heritage Command; the National Register Information System (managed by the National Park Service); online information repositories associated with the California SHPO; the California Historical Resource Information System; online maps and data; and published sources, as cited.

Previous environmental documents used for general information include the PMSR EIS/OEIS (U.S. Department of the Navy, 2002), the Environmental Assessment (EA) for Nonwarhead Standoff Land Attack Missile (SLAM) and Future Model SLAM Firings (U.S. Department of the Navy, 1998), the EA for SSM-1 KAI Missile Testing at SNI (U.S. Department of the Navy, 2007), the EA/Overseas EA for Laser Testing and Training at Point Mugu Sea Range (U.S. Department of the Navy, 2010b), the EA for Countermeasures Testing and Training at Point Mugu Sea Range (U.S. Department of the Navy, 2013b), the EA for Directed Energy (DE) Test Facilities at SNI (U.S. Department of the Navy, 2013a), and the EA/Overseas EA for Point Mugu Sea Range Expansion of Unmanned Systems Operations (U.S. Department of the Navy, 2013c) and the EIS/OEIS for Hawaii-Southern California Training and Testing (HSTT) (U.S. Department of the Navy, 2018b).

Previous cultural resources documents used for information on terrestrial cultural resources include *CA-SNI-168 Data Recovery and Indirect Effect Area Investigations* (Rosenthal et al., 1997); *CA-SNI-169 Data Recovery Investigations, San Nicolas Island, SLAM Targets, U.S. Naval Air Weapons Station, Pt. Mugu, Ventura County, California* (Rosenthal et al., 1999); *Archaeological Evaluation and Site Documentation at site CA-SNI-41 NBVC, San Nicolas Island California* (York et al., 2012); *Section 110 National Register Eligibility Evaluations of Five Archaeological Sites on San Nicolas Island, California* (Byrd et al., 2014); *Inventory and Evaluation of National Register of Historic Places Eligibility for Buildings and Structures at Naval Air Weapons Stations (NAWS) Point Mugu, Ventura County, California* (JRP

Historical Consulting Services, 1998); the ICRMP for NBVC Point Mugu and Port Hueneme (U.S. Department of the Navy, 2010b, 2018a); and the ICRMP for SNI (U.S. Department of the Navy, 2012, 2019). Additional cultural resources documentation provided by Tribes includes information pertaining to SNI as a TCP. The Navy also used information provided directly by the Tribes in consultation.

Additional existing information on submerged resources is based on review of the *Channel Islands National Park and Channel Islands National Marine Sanctuary: Submerged Cultural Resources Assessment* (Morris & Lima, 1996); a *Shipwreck Study for Point Mugu Sea Range* (U.S. Department of the Navy, 1999); a *Historic Context Study to Develop a Historic Theme for Shipwrecks around San Nicolas Island* (U.S. Department of the Navy, 2010a); a *Preliminary Report of Sensitive Marine Archaeological and Historical Sites Located within the Boundary of the Channel Islands National Marine Sanctuary, Part One: Archaeological Cultural Resources* (Howarth & Hudson, 1993); and a list of U.S. Navy sunken and terrestrial military craft (both shipwrecks and airplane wrecks) within the PMSR maintained by the U.S. Navy History and Heritage Command (U.S. Department of the Navy, 2020). Morris and Lima (1996) identified 129 shipwrecks within the Sea Range with plottable coordinates. Other existing databases indicate that as many as 500 shipwrecks have been recorded throughout the Sea Range, although precise locational and descriptive information is lacking (California State Lands Commission Shipwreck Database, 2016; National Oceanic and Atmospheric Administration, 2018). Within the outer portion of the Sea Range beyond 12 NM, major data gaps exist regarding the presence of submerged cultural resources. This area is outside of the Study Area for this EIS/OEIS and is considered beyond the scope of this cultural resources analysis.

#### **3.10.4.2 Cultural Context**

Research suggests that, beginning around 20,000 years ago to about 7,000 years ago, sea levels rose by about 100 meters (m) before reaching present-day levels, inundating large areas where the earliest peoples lived. In California, many archaeological sites in coastal areas dating to ~7,000 years before present (BP) and older were submerged by the rising ocean. As the encroaching ocean inundated, reworked, and redeposited sediments, many of these sites were not preserved, and areas now underwater have less potential to provide information than terrestrial areas. However, recent investigations around the Northern Channel Islands using terrestrial settlement data, Geographic Information System modeling, bathymetric surveys, and coring have shown that there is potential for intact submerged soils (and presumably sites) to occur in the Southern California Bight (Braje et al., 2019). Within the Sea Range, the islands of San Nicolas, Anacapa, Santa Cruz, Santa Rosa, and San Miguel have excellent archaeological integrity.

For at least 13,000 years, Native peoples on the islands and adjacent mainland thrived, developing a complex socio-economic society based on a maritime hunter-gatherer-fisher subsistence regime. Using traditional redwood plank canoes, the Islanders were involved in an elaborate trading network between islands, the adjacent mainland, and into the Great Basin, which began as early as 11,500 years ago. Paleocoastal populations (dating between >12,200 and 8,000 years BP) inhabited all of the islands of the Southern California Bight, with a distinct material culture that includes finely made projectile points including crescents (for hunting water fowl), Channel Islands Barbed, and Channel Islands Amol points (see (Erlandson et al., 2011)). These Paleocoastal peoples are ancestors of later island populations that share many commonalities in material culture throughout the Southern California Bight. Archaeological and genetic data indicate that the Island Chumash and their ancestors continuously inhabited the northern islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapa). The Chumash language, with distinct dialects, is unrelated to any other language group in Native California. The southern islands were

occupied by at least two distinct populations (following the Paleocoastal period) that intermixed, sometime between ~5,000 and 3,000 years ago. The earlier population appears to be more closely related genetically with Chumash people, while the later population is more closely related to peoples of the Takic branch of the Uto-Aztecan language family, including Gabrielino and Luiseño.

While the maritime history in Southern California goes back at least 13,000 years, European maritime history along the U.S. West Coast began in 1542 when Cabrillo sailed into the Southern California Bight. Between the initial voyage of Cabrillo and the land-based voyage of Portolá in 1769, the extent of contact and the effects of European diseases between these sporadic, relatively brief, and poorly documented European voyagers and Native peoples is up for debate. However, epidemics may have had a significant impact on the Island Chumash, and possibly other Islander groups as well. Cabrillo's ship logs indicate his three ships were anchored in Cuyler Harbor on San Miguel Island for about eight weeks (Erlandson & Bartoy, 1995). By the time of the Portolá expedition, Native populations were thriving, indicating that the effects of initial European contact may have been relatively short-lived.

However, permanent Spanish settlement in southern Alta and Baja California began with the establishment of missions and presidios, following the Portolá expedition. As seen throughout the Californias, the coercive induction into the mission system and subsequent systematic genocide had a devastating effect on Native California peoples, economies, and traditional lifeways. By the 1820s, most Native Islanders had been removed from the islands to mainland missions, except for Juana Maria of SNI, who was removed in 1853.

After Mexican independence, the mission system was secularized in 1834, and large tracts of land were given away as Mexican Land Grants. Ownership of the three largest islands (Santa Cruz, Santa Rosa, and Santa Catalina) remained in the hands of several ranching families. When California became a state in 1850, the other five islands which were ungranted by the Mexican government became U.S. government property. Ranching activities occurred on all of the islands, with sheep ranching being one of the most destructive industries, resulting in severe overgrazing and significant erosion. Commercial fishing/hunting endeavors in the 19th and 20th centuries include the Chinese abalone fishery and Russian/Anglo otter hunting. Remains of Anglo and Chinese occupations can be found in abalone gathering and processing camps, fishing camps, and ranch houses, infrastructure, and outbuildings.

U.S. military activities in the PMSR began during World War II and increased dramatically during the Cold War. Point Mugu and its related testing range facilities were critical to the research and development efforts required to test surface-to-surface, surface-to-air, and air-to-surface missiles. Several structures at Point Mugu associated with early missile development and testing have been determined eligible for the NRHP (U.S. Department of the Navy, 2002).

#### **3.10.4.3 Methods for Impact Analysis**

Impact analysis for cultural resources is based on different parameters defined by geographical location. Within U.S. territorial waters of the PMSR, and the APEs for NBVC Point Mugu and SNI, Section 106 of the NHPA and NEPA evaluation are the guiding mandates. In general, impacts are assessed by the nature of the resource, the sensitivity of the resource to the proposed activities, and the duration of the effects on the environment.

### 3.10.5 Affected Environment

The ROI is divided into three distinct regions for cultural resources evaluation: the area beneath the PMSR Special Use Airspace from shore out to 12 NM, the NBVC Point Mugu APE, and the SNI APE. Because the Proposed Action would not affect onshore cultural resources at Port Hueneme, or San Miguel, Santa Rosa, Anacapa, or Santa Barbara islands, they are not evaluated further. In the PMSR (36,000 square miles), there are a number of known wrecks and obstructions. These resources have not been evaluated as properties eligible for listing in the NRHP, however, they will be assumed eligible only for purposes of evaluating effects in this analysis. The Study Area could also contain submerged archaeological sites on the continental shelf within 12 NM from shore.

The discontinuous APE for NBVC Point Mugu includes the DE Systems Integration Laboratory, and Building PM-55 Launch Complex, including the Alpha, Bravo, Charlie, and Nike Zeus launch pads, as well as the nearshore area to the extent that alternatives addressed in this EIS/OEIS may affect archaeological, architectural, and other historic resources (see Figure 3.10-1).

The discontinuous APE for SNI consists of the Land Impact Site, the Alpha Launch Complex, Building N-807 Launch Complex at the Rock Crusher Launch Site, and the DE test and target areas (see Figure 3.10-2). The APE for each location also encompasses a 30-m buffer around each activity area, except for the Land Impact Site which has a larger APE. The APE for the Land Impact Site includes a 300-foot (ft.) buffer around the target pad and immediate surrounding areas where impact debris has the potential to land.

#### 3.10.5.1 Point Mugu Sea Range

##### 3.10.5.1.1 Submerged Pre-Contact Cultural Resources

Submerged pre-contact cultural resources within the PMSR may include Paleocoastal and Early Holocene archaeological sites in waters surrounding island and coastal areas of the PMSR. These sites are most likely to occur nearshore within water depths of 100 m below mean high tide, reflecting the range of sea level rise that has occurred since people first settled island and coastal Southern California. Offshore areas at Point Mugu are subject to high sedimentation rates and sediments in this area are estimated to be around 30 m thick. In the waters surrounding the Northern Channel Islands, the Channel Islands National Marine Sanctuary extends 3 NM from the mean high tide line, and encompasses water depths to 100 m below mean high tide. Water depths < 100 m around SNI extend beyond 3 NM to the northwest (U.S. Department of the Navy, 2010b). However, no pre-contact submerged archaeological sites have yet been documented in submerged areas surrounding the islands or mainland coast.

##### 3.10.5.1.2 Known Submerged Vessels and Aircraft

Submerged shipwrecks and planes comprise all of the documented historic resources on the seafloor within the Sea Range. Over 500 sunken vessels have been reported within the coastal waters of Southern California. However, precise locations are not often known, with vague descriptive narratives of the area in which the ship was last known, or thought to have sunk, being provided (California State Lands Commission Shipwreck Database, 2016; National Oceanic and Atmospheric Administration, 2018). There are 195 shipwrecks known to have occurred within the PMSR, 129 of them with plottable coordinates (Morris & Lima, 1996; U.S. Department of the Navy, 1999). The largest number of shipwrecks found within the PMSR is near Santa Rosa Island, in the vicinity of Talcott Shoal, Sandy Point, Bee Rock, East Point, and Becher's Bay. Thirty-two shipwrecks are known to have occurred within 2 NM of SNI (U.S. Department of the Navy, 2010a). These wrecks include fishing boats, barges, yachts, cargo

carriers, passenger ships, freighters, and target ships. In many cases, although a shipwreck is known to have occurred and its general coordinates are known, no wreckage has been located.

Known sunken Navy watercraft and aircraft losses within the PMSR (U.S. Department of the Navy, 2020) include 31 sunken military watercraft and 92 aircraft losses (U.S. Department of the Navy, 2020). Two of the listed shipwrecks occurred before 1920, seven of the shipwrecks were involved in the 1923 Honda Point disaster, and 22 were listed as targets as part of fleet reductions.

The 92 identified aircraft losses all occurred before 1951, with 87 of those losses occurring during the 1942–1945 period. None of the losses have precise locational data, and it is unclear whether or not any aircraft were salvaged. Some of the losses occurred as a result of a lack of fuel, engine failure, or falling off a ship. Of the 92 aircraft losses, 63 were identified as possibly occurring within the PMSR, but precise locational data was not recorded.

Using the locations of lost ships and ships found within the PMSR, a predictive model prepared in 2002 for the original EIS/OEIS found that shipwrecks are most likely to be found less than 0.5 NM from shore in relatively shallow water (less than 33 ft. [10 m] in depth). The model also showed that few ships are known to have been lost more than 10 NM from shore. Those that are lost more than 10 NM from shore are unlikely to be found during standard at sea activities given the depth to the ocean floor at that distance (U.S. Department of the Navy, 2002).

In 2010, a historic context for shipwrecks that occurred after European contact until 1965 within 1 NM of SNI was prepared. As part of the context, 45 shipwrecks and 21 downed aircraft were identified in the vicinity of SNI and Begg Rock. These wrecks and downed aircraft occurred from the mid-19th century to the late-20th century (U.S. Department of the Navy, 2010a). Preliminary NRHP evaluations were made for the 15 shipwrecks that are believed to have occurred within 1 NM of SNI and are considered shipwrecks under the Abandoned Shipwrecks Act of 1988 (U.S. Department of the Navy, 2010a). None of these shipwrecks were recommended eligible for listing in the NRHP.

#### **3.10.5.1.3 Terrestrial Cultural Resources**

##### **3.10.5.1.4 Naval Base Ventura County Point Mugu**

The vast majority of architectural resources on NBVC Point Mugu have been inventoried, and most of the non-developed and non-wetland acreage has been surveyed for pre-contact sites, none of which occur within the APE. Building PM-55 and its associated Launch Complex is a Cold War era resource that was determined eligible for listing on the NRHP under Criteria A and C, representing the only historic property on Point Mugu within the APE (see Figure 3.10-1).

##### **3.10.5.1.5 Naval Base Ventura County San Nicolas Island**

SNI has been the subject of archaeological investigations for decades, including an island-wide archaeological survey in 1996–1998 that identified or updated information regarding 550 sites. In addition, one Tribe has provided information to the Navy identifying SNI as a potential TCP that may be eligible for inclusion in the NRHP, and a potential archaeological district that may be eligible for inclusion in the NRHP.

###### **3.10.5.1.5.1 Pre-Contact Cultural Resources**

Within the APEs on SNI, there are four eligible archaeological sites (CA-SNI-12, CA-SNI-41, CA-SNI-168, and CA-SNI-169) and two ineligible archaeological sites (CA-SNI-44 and CA-SNI-61) (Table 3.10-1). The eligibility of CA-SNI-12, CA-SNI-168, and CA-SNI-169 were the result of consensus determinations made

between the Navy and the SHPO as part of previous Section 106 consultations. CA-SNI-41 was recommended eligible, and the Navy is seeking concurrence from SHPO as part of this undertaking. Human remains have been recovered from and/or observed at several sites within the APE (CA-SNI-12, CA-SNI-41, and CA-SNI-168), reflecting the interconnectedness between burial traditions, settlement patterns, and the traditional cycle of care and connection to place (U.S. Department of the Navy, 1998). The Navy consulted with culturally affiliated Tribes to resolve disposition of human remains and associated funerary objects previously removed from these sites consistent with NAGPRA.

**Table 3.10-1: Cultural Resources within the APE on SNI**

State Site No/ Resource	Age	Site Type	NRHP Eligibility
CA-SNI-12	Pre-Contact	Habitation; with burials and cemetery	Eligible
CA-SNI-41	Pre-Contact	Habitation; with burials, cremation, and cemetery	Eligible
CA-SNI-44	Pre-Contact	Habitation; no known human remains	Ineligible*
CA-SNI-61	Pre-Contact	Habitation; no known human remains	Ineligible*
CA-SNI-168	Pre-Contact	Habitation; with burials and cemetery	Eligible
CA-SNI-169	Pre-Contact	Habitation; no known human remains	Eligible
Alpha Launch Complex	Historic Military Era	Buildings and associated launch pads	Presumed Eligible
SNI Archaeological District	Pre-Contact/ Post-Contact	Multiple	Presumed Eligible <sup>†</sup>
San Nicolas Island	Time Immemorial	Traditional Cultural Property	Presumed Eligible <sup>†</sup>

\*Sites within the APE that are individually ineligible for NRHP listing are presumed eligible as potential contributors to the proposed archaeological district.

<sup>†</sup>The SNI Archaeological District and TCP are proposed historic properties. They have not yet been evaluated for inclusion in the NRHP; however, they are presumed eligible for purposes of this EIS/OEIS.

CA-SNI-12 is a large, eroding midden complex located on a low coastal terrace within sand dunes. The site consists of dense deposits of marine shell, lithics, some ground stone, and faunal remains dating to the Middle Holocene (~5,000 BP). The site is disturbed by aeolian erosion and the presence of a road that bisects the site. Stabilized areas are present and contain buried deposits and human burials, within two cemetery areas located in the northwestern and eastern portions of the site. Six burials were removed from the site by previous researchers from the 1930s through 1970s and additional burials are currently being exposed by erosion, approximately 30 m southeast of the parking area. Site CA-SNI-12

was determined eligible for listing on the NRHP under criterion D, with concurrence from SHPO in 2010 (U.S. Department of the Navy, 2013a). The DE shooter site at Tender Point is located within site CA-SNI-12.

CA-SNI-41 is a habitation site with a large, dense, eroding shell midden complex situated on a large sand dune, dated primarily to between 3,000 and 5,000 years ago. The site consists of several loci of buried midden flanked by eroded caliche outcrops. It contains lithics, a large quantity of marine shell, some ground stone, miscellaneous tools, and exotic material such as chert. Modern disturbance to the site includes several pipes and cables that run across the site, especially at the western and eastern ends. There may have been an old road along the southern flank of the dune. The western part of the dune has been disturbed by the construction of a road. Early site investigations between the 1930s and 1950s resulted in the removal of seven burials from the site. In 2010, two burials were noted eroding on the surface during Section 110 archaeological testing at the site. Ancestral remains and funerary objects from CA-SNI-41 were included in the 2019 NAGPRA repatriation/reinternment. The 2010 Section 110 evaluation of site CA-SNI-41 recommended the site eligible for listing on the NRHP under criterion D. Site CA-SNI-41 is located within the APE for the Building N-807 Launch Complex at the Rock Crusher Launch Site.

CA-SNI-44 is a lithic scatter and low density midden dated to the Late Holocene that has been heavily impacted by past military construction of a launch pad. The site is largely disturbed and deflated, but buried, intact midden deposits are present. Lithic materials include metavolcanics, quartzite, breccia, and chert; and ground stone artifacts consist of a sandstone pestle and two manos. Midden constituents include black abalone, owl limpet, California mussel, and sea mammal. No human remains have been identified at this site, and CA-SNI-44 has been determined ineligible for listing on the NRHP, with concurrence from SHPO in 2015. Site CA-SNI-44 is located within the Alpha Launch Complex and was previously heavily disturbed by construction of the launch complex.

CA-SNI-61 is a large site consisting of six loci dated to the Late Holocene with low densities of shell midden and lithic debitage, almost exclusively concentrated in near-surface contexts. The site has been extensively disturbed by the construction of Tufts road, buildings, and a launch pad. No human remains have been identified at CA-SNI-61, and the site was determined to be ineligible for listing on the NRHP, with concurrence from SHPO in 2015. Site CA-SNI-61 is located within the Alpha Launch Complex and was previously heavily disturbed by construction of the launch complex.

CA-SNI-168 is a large shell midden with six (6) loci that is subject to wind (aeolian) erosion. Archaeological testing of the site to support construction of the Land Impact Site target pad extension (formerly SLAM) in 1997 indicate this is a habitation site where general domestic production and maintenance activities occurred year-round, primarily between ~3,200 and 2,400 years ago. The site contained numerous ground stone tools (manos, mortars, pitted stones, net sinkers and weights), lithic debitage, a large chert biface, whalebone tools, several shell fishhook blanks, and ornamental items including pendants and shell/stone beads. The site is largely deflated with limited intact midden soils at the location of the Land Impact Site target pad, which is located on top of site CA-SNI-168. In consultation with SHPO, data recovery efforts in 1997 mitigated impacts from construction and use of the Land Impact Site. Three burials were removed from an apparent cemetery area at this site, one in the 1970s, one in the 1980s, and one in 2000. Site CA-SNI-168 was determined eligible for listing on the NRHP under criterion D, with concurrence from SHPO in 1996.

CA-SNI-169 is a dispersed midden area consisting of at least three deflating midden remnants in a dune environment. Cultural material identified on site includes cores, flakes, ground stone, marine shell, bird bone, and fish bone. The presence of several fishhook fragments and blanks, combined with the diversity of fish taxa recovered, indicates fishing occurred in nearshore kelp forests and pelagic waters further out. Occupation at the site occurred primarily between ~2,000 and 3,000 years ago. No human remains have been identified at this site, and it is considered eligible for listing on the NRHP under criterion D, with concurrence from SHPO in 1996. Site-CA-169 is located adjacent to the Land Impact Site.

#### **3.10.5.1.5.2 Historic Built Environment Cultural Resources**

There is one architectural historic property within the APE area associated with the Alpha Launch Complex on SNI. This property is comprised of the Alpha Launch Complex facility and includes the following architectural resources: Buildings N-189, N-192, N-306, N-307, N-314, N-315, N-316, N-511 and its associated Launch Complex.

The Alpha Launch Complex buildings were built between 1962 and 1968 in support of launch activities during the Cold War era, and are still in use supporting launch activities today. The buildings associated with the launch complex were determined not eligible for the NRHP under Criteria Consideration G for properties that are less than 50 years old (JRP Historical Consulting Services, 1998). Currently, these buildings are all more than 50 years old. Therefore, the Navy has determined for the purposes of this EIS/OEIS and assessing potential impacts, the Alpha Launch Complex buildings are presumed eligible for listing on the NRHP.

#### **3.10.5.1.5.3 Newly Identified Cultural Resources**

During Section 106 consultation for another undertaking on SNI, a consulting Tribe informed the Navy of two additional potential historic properties. These potential historic properties were identified as an archaeological district and a TCP. The Tribe asserts that each archaeological site on the island is a contributing element to a larger archaeological district. The Tribe also informed the Navy that they view the entire island as a TCP. In response to the Tribe's identification of these potential historic properties, the Navy has contracted both an archaeological district study and ethnographic study of SNI to identify and define the nature of both property types. For the purposes of this EIS/OEIS, the Navy presumes eligibility of these potential historic properties and includes them in the NEPA and NHPA analysis.

The proposed archaeological district may include all archaeological sites on SNI, regardless of their NRHP eligibility. For the purposes of this EIS/OEIS, only the sites located within the undertaking's APE or ROI are analyzed for impacts. Within the APE on SNI, there are six archaeological sites (see Table 3.10-1). Four of the sites (CA-SNI-12, CA-SNI-41, CA-SNI-168, and CA-SNI-169) are eligible for listing in the NRHP. The other two sites, CA-SNI-44 and CA-SNI-61, have been recommended ineligible for listing in the NRHP but they may contribute to the proposed archaeological district. Section 3.10.5.1.5.1 (Pre-Contact Cultural Resources) provides site descriptions.

The information regarding the potential TCP identified by a consulting Tribe is confidential, but it is generally described as occurring within a ceremonial landscape featuring prominently in their traditional religion, song, and ceremony. The TCP is further described as retaining integrity of location, setting, feeling, and association to the extent that an ancestor from the beginning of time would recognize the island today. The Tribe has articulated to the Navy that the island retains its "integrity of condition" due to the limited physical alteration of the landscape as a result of Navy management, compared with

other areas in Southern California. Further, the Tribe maintains that an “integrity of relationship” exists as the island is prominently featured in present-day culture, song, and oral tradition.

**3.10.6 Environmental Consequences**

This section evaluates how and to what degree the activities described in Chapter 2 (Description of Proposed Action and Alternatives) could impact cultural resources within the PMSR, including resources near land-based launch and impact sites. Baseline and proposed testing and training activities for each alternative is presented in Chapter 2 (see Table 2-1 and Table 2-2). Additional details of the proposed testing and training activities are provided in Appendix A (PMSR Scenario Descriptions). Table 3.10-2 presents the proposed testing and training activities and stressors that could potentially impact cultural resources. The stressors analyzed for cultural resources include physical disturbance/strike and impulsive noise. This analysis considers potential impacts on shipwrecks, submerged resources, and terrestrial cultural resources from falling MEM debris, activities associated with the positioning of DE equipment, and impulsive noise from land-based launches.

**Table 3.10-2: Summary of Stressors Analyzed for Cultural Resources from Testing and Training Activities within the Study Area**

Activity Category	Stressor	Potential Impacts	Determination
Air-to-Air	Physical Disturbance/Strike	Military Expended Material (MEM) from at sea testing and training can sink through the water column and come in contact with cultural resources. However, most expended material is small, travels slowly through the water, and will not alter the characteristics of the submerged cultural resources.	No significant impact
Air-to-Surface	Physical Disturbance/Strike	MEM from at sea testing and training can sink through the water column and come in contact with cultural resources. However, most expended material is small, travels slowly through the water, and will not alter the characteristics of the submerged cultural resources.  MEM from Land Impact Site testing and training activities could impact sites CA-SNI-168 and CA-SNI-169 as expended materials strike and are subsequently retrieved from the impact site. However, previous analysis resulted in the mitigation of impacted areas of CA-SNI-168 and the development of protective measures to avoid adverse effects to other areas of sites CA-SNI-168 and CA-SNI-169.	No significant impact

**Table 3.10-2: Summary of Stressors Analyzed for Cultural Resources from Testing and Training Activities within the Study Area (continued)**

Activity Category	Stressor	Potential Impacts	Determination
Surface-to-Air	Physical Disturbance/Strike	MEM from at sea testing and training can sink through the water column and come in contact with cultural resources. However, most expended material is small, travels slowly through the water, and will not alter the characteristics of the submerged cultural resources.	No significant impact
	Impulsive Noise	Impulsive noise from land-based launch activities can impact certain types of cultural resources. However, impulsive noise events are intermittent and brief (1–21 seconds, with a maximum of 40 events per year on San Nicolas Island [SNI]), resulting in relatively small increases in overall noise levels at the locations where the activities occur. As there are no changes to the proposed activities or the frequency of launches, no new impacts from continued use are anticipated. Therefore, impulsive noise from land-based launch events will not alter characteristics of cultural resources.	No significant impact

**Table 3.10-2: Summary of Stressors Analyzed for Cultural Resources from Testing and Training Activities within the Study Area (continued)**

Activity Category	Stressor	Potential Impacts	Determination
Surface-to-Surface	Physical Disturbance/Strike	<p>MEM from at sea testing and training can sink through the water column and come in contact with cultural resources. However, most expended material is small, travels slowly through the water, and will not alter the characteristics of the submerged cultural resources.</p> <p>MEM from Land Impact Site testing and training activities could impact sites CA-SNI-168 and CA-SNI-169 as expended materials strike and are subsequently retrieved from the impact site. However, previous analysis resulted in the mitigation of impacted areas of CA-SNI-168 and the development of protective measures to avoid adverse effects to other areas of site CA-SNI-168 and CA-SNI-169.</p> <p>Activities associated with the positioning of temporary Directed Energy targets and shooter equipment occur on existing pads/roads that are within close proximity of sensitive cultural resources at CA-SNI-12. To ensure Directed Energy activities have no adverse effects on CA-SNI-12, protective measures in place include signage, briefing of personnel, and an escort by a Navy archaeologist during equipment mobilization/demobilization.</p>	No significant impact
	Impulsive Noise	<p>Impulsive noise from land-based launch activities can impact certain types of cultural resources. However, impulsive noise events are intermittent and brief (1–21 seconds, with a maximum of 40 events per year on SNI), resulting in relatively small increases in overall noise levels at the locations where the activities occur. As there are no changes to the proposed activities or the frequency of launches, no new impacts from continued use are anticipated. Therefore, impulsive noise from land-based launch events will not alter characteristics of cultural resources.</p>	No significant impact

**Table 3.10-2: Summary of Stressors Analyzed for Cultural Resources from Testing and Training Activities within the Study Area (continued)**

Activity Category	Stressor	Potential Impacts	Determination
<b>Subsurface-to-Surface</b>	Physical Disturbance/Strike	<p>MEM from at sea testing and training can sink through the water column and come in contact with cultural resources. However, most expended material is small, travels slowly through the water, and will not alter the characteristics of the submerged cultural resources.</p> <p>MEM from Land Impact Site testing and training activities could impact sites CA-SNI-168 and CA-SNI-169 as expended materials strike and are subsequently retrieved from the impact site. However, previous analysis resulted in the mitigation of impacted areas of CA-SNI-168 and the development of protective measures to avoid adverse effects to other areas of site CA-SNI-168 and CA-SNI-169.</p>	No significant impact

**3.10.6.1 No Action Alternative**

Under the No Action Alternative, proposed testing and training activities would not occur within the PMSR. Other military activities not associated with this Proposed Action would continue to occur. Stressors such as physical disturbance/strike and impulsive noise, as listed above in Table 3.10-2, would not be introduced into the environment. Therefore, existing environmental conditions would either remain unchanged or would improve slightly after cessation of ongoing testing and training activities.

Discontinuing the testing and training activities would result in fewer impacts within the marine and terrestrial environment where testing and training activities have historically been conducted. Therefore, discontinuing testing and training activities under the No Action Alternative would lessen the potential for impacts on submerged and terrestrial cultural resources.

**3.10.6.2 Alternative 1 (Preferred Alternative)**

**3.10.6.2.1 Physical Disturbance and Strike**

This section analyzes the disturbance or strike potential to cultural resources from MEM and other materials, such as expendable targets, as well as activities associated with the positioning of DE equipment. MEM are missile and target debris, non-explosive munitions, and explosive munitions, which are small-to-medium-sized objects.

**3.10.6.2.1.1 Military Expended Materials**

***Submerged Cultural Resources***

Shipwrecks have been recorded in offshore waters, but most known shipwrecks are located near islands and the mainland. Additionally, submerged pre-contact resources within the PMSR may include Paleocoastal and Early Holocene archaeological sites in waters surrounding island and coastal areas of the PMSR. These sites are most likely to occur within water depths of 100 m below mean high tide. The

majority of proposed testing and training activities would occur over the open ocean and the settling of MEM would primarily occur in areas away from where potential pre-contact archaeological sites, shipwrecks, or other resources would be found.

In the event that MEM were to settle to the seafloor in the vicinity of submerged cultural resources, there would be no significant impact of MEM on submerged cultural resources under Alternative 1 because (1) most anticipated expended munitions would be small objects and fragments that would slowly drift to the seafloor after striking the ocean surface, and (2) settling of MEM on the seafloor would be diffuse and transitory, as MEM is likely to be transported by currents and other turbulence. Therefore, the settling of MEM would not alter the archaeological or cultural characteristics of the submerged cultural resources if they should sink on or in the vicinity of a historic property.

### ***Terrestrial Cultural Resources***

#### **Building PM-55 Launch Complex**

Under Alternative 1, testing and training activities would include the use of Building PM-55 and its associated Launch Complex at NBVC Point Mugu. For activities associated with the proposed undertaking, the Building PM-55 Launch Complex and associated pads would continue as launch facilities. The Navy typically launches 50 to 70 missiles or targets annually from Building PM-55 and its associated beach launch pads. The majority of launches entail jet-assisted takeoff (JATO) or rocket-assisted takeoff (RATO) bottles to assist the launch of missiles. These bottles primarily fall into the wetland immediately in front of the launch pad (the drop zone) if the event occurs at Building PM-55. If the launch occurs from an operational pad adjacent to the beach (Pad Alpha, Pad Bravo, Pad Charlie, or Pad Nike Zeus), JATO/RATO bottles may expend into the near shore environment. The RATO and JATO bottles are retrieved during periodic clean-up processes. Consistent with findings of the 2002 EIS/OEIS, recent analysis found that the current proposed undertaking would not adversely affect the historic property because the building's historic or current use would not be altered. Therefore, there would be no significant impact to Building PM-55 and its associated Launch Complex under Alternative 1.

#### **CA-SNI-168 and CA-SNI-169**

Under Alternative 1, testing and training activities would also include the use of the Land Impact Site on SNI. The Land Impact Site was previously known as the SLAM target site and has been in use since 1989. The Land Impact Site contains an impact pad, driveway, and staging area constructed of fill and gravel. Impact areas are covered with between 5 and 20 ft. of fill material. Operations include target practice with inert munitions on empty Container Express (commonly known as CONEX) boxes configured to simulate buildings, helicopter or aircraft bodies, as well as other constructed simulated targets. Physical disturbance and strike caused by MEM associated with test activities at the Land Impact Site were analyzed for their potential to impact cultural resources.

The Land Impact Site was constructed on the archaeological site CA-SNI-168 and adjacent to the archaeological site CA-SNI-169. As discussed in Section 3.10.5.1.5.1 (Pre-Contact Cultural Resources), sites CA-SNI-168 and CA-SNI-169 were determined to be eligible for the NRHP, with concurrence from the SHPO. In 1998, the Navy prepared an EA for a proposed expansion of what was then known as the SLAM target site (U.S. Department of the Navy, 1998). The EA assessed impacts on cultural resources within a large APE which accounted for areas where missiles are expected to hit the target pad as well as an area where debris scatter and cleanup efforts could impact cultural resources (Rosenthal et al., 1997). In consultation with the SHPO, the Navy mitigated these effects through data recovery of the target area, including effects to CA-SNI-168 incurred during construction of the impact pad. Additionally,

the Navy developed procedures in consultation with SHPO to avoid or minimize potential impacts to other portions of the APE not subject to the data recovery efforts. These protective measures are detailed below:

- **Site protection:** The Land Impact Site is covered with approximately 5–20 ft. of fill material, which is refilled and re-compacted after each impact activity. Site access to the target pad is limited to pre/post-test and training activities, and personnel must be accompanied by a Navy archaeologist. Off-road travel is restricted; off-road vehicle traffic is prohibited and off-road pedestrian traffic is limited. Collection of artifacts is prohibited.
- **Pre-activity procedures:** A pre-activity survey is completed by a Navy archaeologist up to one week prior to each impact activity to identify any visible artifacts or NAGPRA cultural items. Aircrew and ground crew briefings are also conducted by a Navy archaeologist prior to each event.
- **Event procedures:** A Navy archaeologist is present for all impact activities.
- **Post-activity procedures:** A post-activity survey is completed by a Navy archaeologist immediately following an impact event. Debris located on the surface within sensitive resources areas are recovered by the archaeologist and coordinated with range environmental representatives, as appropriate. In the event of a post-review discovery, unanticipated effect, or inadvertent discovery of NAGPRA cultural items, the archaeologist on site will notify the NBVC Cultural Resources Manager, and the Navy will proceed consistent with 36 CFR part 800.13 as well as NAGPRA and its implementing regulations, as appropriate. To date however, no archaeological material or NAGPRA cultural items have been observed or recovered following, or associated with, an impact event.

Under Alternative 1, the Navy would continue to use the Land Impact Site; however, there would be no changes to the frequency or type of activity, and activities would be similar in nature to those analyzed in the 1998 SLAM EA. The proposed tempo for the continued use of the Land Impact Site would not exceed what was previously analyzed in the 1998 SLAM EA for the SLAM target site, approximately 8–26 times annually (U.S. Department of the Navy, 1998).

Data recovery conducted at CA-SNI-168 in support of the 1998 SLAM EA resulted in the determination that activities at the Land Impact Site have no adverse effect upon CA-SNI-168. This determination was made with SHPO concurrence. Since the types of activities included in the proposed undertaking are similar in nature to those analyzed during the development of the 1998 SLAM EA, and with continued implementation of the protection measures and procedures listed above, the continued use of the Land Impact Site would not significantly impact site CA-SNI-168. Therefore, there would be no significant impact to CA-SNI-168 or CA-SNI-169 under Alternative 1.

#### SNI Archaeological District

While the proposed archaeological district encompasses all of SNI, the Navy has defined the APE consistent with 36 CFR 800.16(d) to include locations on SNI where activities associated with the PMSR may directly or indirectly cause alterations in the character or use of historic properties. Therefore, the APE for this EIS/OEIS is limited to the Land Impact Site, Alpha Launch Complex, Building N-807 Launch Complex, and DE target and shooter sites. Analyses of PMSR activities are limited to those identified and carried out within the APE; however, impacts to the proposed archaeological district as a whole are taken into consideration.

Under Alternative 1, testing and training activities would include activities within archaeological sites which may be contributing elements to the proposed archaeological district. As noted above, eligible archaeological sites located within the APE are CA-SNI-12, CA-SNI-41, CA-SNI-168, and CA-SNI-169, and ineligible sites are CA-SNI-44 and CA-SNI-61. However, for the purposes of this consultation, the Navy considers sites CA-SNI-44 and CA-SNI-61 to be potential contributors to the proposed archaeological district.

MEM would have no significant impact on sites within the proposed archaeological district, and the Navy has determined that PMSR EIS/OEIS activities would not alter any of the characteristics that qualify the proposed archaeological district for inclusion on the NRHP. Therefore, there would be no significant impact to the archaeological district under Alternative 1.

#### Traditional Cultural Property

While the proposed TCP encompasses all of SNI, the APE for this EIS/OEIS is limited to the Land Impact Site, Alpha Launch Complex, Building N-807 Launch Complex, and DE target and shooter sites. Analyses of PMSR activities are limited to those identified and carried out within the APE; however, impacts to the proposed TCP in its entirety are taken into consideration.

The TCP is generally described as occurring within a ceremonial landscape featuring prominently in traditional religion, song, and ceremony. The TCP is further described by the Tribe as currently retaining integrity of location, setting, feeling, and association to the extent that an ancestor from the beginning of time would recognize the island today. While physical disturbance and strike activities associated with the PMSR activities at the Land Impact Site and launch complexes on SNI may be inconsistent with Tribal values, the proposed undertaking includes no new activities or increases in operational tempo within the APE on SNI. Therefore, there is no significant impact to the TCP under Alternative 1.

#### **3.10.6.2.2 Directed Energy**

This section analyzes the impact potential on cultural resources from activities associated with the positioning of DE targets and equipment. DE activities consists of firing a high energy laser or high-power microwave system at target sites at sea or on SNI.

#### ***Submerged Cultural Resources***

Under Alternative 1, DE testing and training shooter activities would occur from land-based sites, with targets located either on land or at sea. Positioning DE targets at sea would occur at or above the sea surface, with no potential to impact submerged cultural resources.

#### ***Terrestrial Cultural Resources***

##### CA-SNI-12

Under Alternative 1, the DE shooter site at Tender Point is located within close proximity of archaeological site CA-SNI-12. As mentioned in 3.10.5.1.5.1, site CA-SNI-12 was determined eligible for the NRHP, with SHPO concurrence (U.S. Department of the Navy, 2015). Proposed activities associated with the DE shooter site at Tender Point include firing high energy laser or high-power microwave systems to attack airborne, seaborne, or land-based targets. DE test events are currently conducted using temporary equipment staged in the parking area at Tender Point, near CA-SNI-12. Prior to each event, a Navy archaeologist briefs personnel as to where they can and cannot go and off-limits areas are reinforced by signage. A Navy archaeologist is onsite during the staging and demobilization of equipment. The proposed tempo for use of the DE facilities on SNI would be approximately 125 days per

year. This activity and tempo was analyzed in the 2015 DE Test Facility EA and was found to have no significant impact upon cultural resources, with SHPO concurrence on a finding of no adverse effects to CA-SNI-12 (U.S. Department of the Navy, 2015). Therefore, there would be no significant impact to CA-SNI-12 from DE activities under Alternative 1.

#### SNI Archaeological District

Under Alternative 1, DE activities would occur within site CA-SNI-12. The activities associated with DE testing and training would not adversely affect individually eligible historic properties or potential contributors to the archaeological district on SNI. Therefore, there would be no significant impact to the proposed archaeological district from DE activities under Alternative 1.

#### Traditional Cultural Property

The Navy recognizes that DE activities, including the positioning of temporary equipment, on SNI may be inconsistent with Tribal values. However, assuming for the purposes of this analysis that the proposed TCP retains integrity of location, design, setting, feeling, and association under existing conditions, because proposed DE testing and training includes no new activities or increases in operational tempo on SNI, and because the use or positioning of target/shooter equipment would not alter the integrity of the TCP, no significant impacts to terrestrial cultural resources from DE activities would occur under Alternative 1.

#### **3.10.6.2.3 Impulsive Noise**

This section analyzes the impact to cultural resources from non-explosive impulsive noise, such as that resulting from sonic booms which can create intense shock waves that cause airborne vibration, similar to thunder.

Cultural resources potentially impacted by noise and vibrations caused by impulsive noise may include certain types of historic properties, such as caves and rock shelters, petroglyphs or pictographs on rock faces, sensitive historic architectural resources, and TCPs and sacred sites. To assess the potential impacts on cultural resources from impulsive noise and vibration associated with the Proposed Action, the Navy utilized available noise studies and guidelines. The National Research Council also has developed general guidelines for evaluating overall impacts of various noise levels (National Research Council and National Academy of Sciences, 1977). The National Research Council guidelines have been cited consistently as the basis for evaluating impacts on historic properties. For example, sounds lasting more than one second and with a peak unweighted sound level greater than or equal to 130 decibels (dB) (in the 1 hertz [Hz] to 1,000 Hz frequency range) are considered potentially damaging to structural components.

Under Alternative 1, land-based launch activities at the Alpha Launch Complex and Building N-807 Launch Complex on SNI would continue and could result in intermittent impulsive noise. The Navy proposes a maximum of 40 launches annually from the Alpha and Building N-807 Launch Complexes combined. Measured durations of sound from various types of missiles launched from these facilities typically range from less than 1 s up to 21 s (Holst & Greene Jr., 2008). The A-weighted sound pressure level observed for Vandal missiles (MQM-8) launched from SNI ranged from 87 decibels referenced to 20 micropascals (dB re 20  $\mu$ Pa) at the closest point of approach of 5,500 ft. (1,700 m) to 133 dB re 20  $\mu$ Pa at the closest point of approach of 230 ft. (70 m) for a duration range from 0.17 s to 4.58 s (U.S. Department of the Navy, 2002).

In addition to missiles, aerial targets are also launched from SNI. The typical duration of sound generated by target launches is 0.56 s to 2.11 s with peak noise levels from 161 dB re 20  $\mu$ Pa at 50 ft. (15 m) to 115 dB re 20  $\mu$ Pa at 3,000 ft. (900 m) (U.S. Department of the Navy, 2002).

### ***Submerged Cultural Resources***

As previously stated, shipwrecks have been recorded in coastal areas within the PMSR, with most occurring in coastal waters near the mainland and the islands. Submerged prehistoric resources within the PMSR may also include Paleocoastal archaeological sites in waters surrounding island and coastal areas of the PMSR. These sites are most likely to occur within water depths of 100 m below mean high tide.

Impulsive noise generated by launch events dissipates through the water column. Frequencies greater than 20 Hz have been found to be difficult to observe at depths greater than 33 ft. (10 m) (Sohn et al., 2000). The Navy consulted with the CA SHPO for at-sea activities analyzed in the 2018 HSTT EIS/OEIS. The Navy determined that the activities analyzed in the HSTT EIS/OEIS, which are similar to those proposed in this EIS/OEIS, would not adversely affect submerged National Register listed or eligible properties. The CA SHPO concurred with the Navy's findings in October 2017.

Based on the analysis presented above, as well as previous analysis and SHPO consultations, vibration and sound from impulsive noise caused by land-based launches would not significantly impact known or unknown submerged cultural resources under Alternative 1.

### ***Terrestrial Cultural Resources***

#### Traditional Cultural Property

There is one cultural resource within the SNI APE that may be impacted by impulsive noise. As mentioned above, a proposed TCP comprised of the entirety of SNI was identified within the Study Area. The Navy acknowledges that the introduction of impulsive noise has the potential to impact the setting of TCPs. As such, noise caused by the launch activities on SNI were analyzed for their potential to impact the proposed TCP.

Under Alternative 1, the Navy would continue use of the launch sites on SNI; however, there would be no changes to the frequency or type of activities proposed at the SNI launch sites. The proposed tempo for the continued use of the launch pads would not exceed 40 events annually, with a measured duration of 1–21 s for each event. As such, these launch activities would result in intermittent loud noises but relatively small increases in overall noise levels at locations where the proposed activities would occur. Additionally, on SNI, ambient noise from wind and wave action measured prior to recorded missile launches averaged 66 dB re 20  $\mu$ Pa flat-weighted with a peak of 91 dB (Holst & Greene Jr., 2008). The presence of ambient noise can mask noise from individual launch events.

The Navy recognizes that launch activities and the associated noise on SNI may be inconsistent with Tribal values. However, assuming for the purposes of this analysis that the proposed TCP retains integrity of location, design, setting, feeling, and association under existing conditions, because the Proposed Action includes no new activities or increases in operational tempo on SNI, and because the noise events are infrequent and momentary, resulting in a relatively small increase in overall noise levels on SNI, no significant impacts to terrestrial cultural resources from impulsive noise would occur under Alternative 1.

**3.10.6.3 (Sutherland et al., 1990)(Sutherland et al., 1990)(Sutherland et al., 1990) Alternative 2**

A comparison of operational tempo proposed for each alternative, and proposed types and level of activities, are provided in Chapter 2 (Description of Proposed Action and Alternatives).

Under Alternative 2, some testing and training activities would decrease compared to Alternative 1 (refer to Table 2-2). While some activities would increase from baseline conditions, there are no proposed increases in activities on SNI over that which were previously analyzed. Because the types of activities would be the same and there would be an overall decrease in air-to-air, air-to-surface, surface-to-air, surface-to-surface, and subsurface-to-surface operations, there would be no appreciable change to the impact conclusions as described under Alternative 1. Therefore, there would be no significant impact to cultural resources as a result of testing and training operational scenarios within the PMSR or on NBVC Point Mugu and SNI under Alternative 2.

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