

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 submerged cultural resources found within the Point Mugu Sea Range (PMSR), as well as terrestrial cultural resources found on Naval Base Ventura County (NBVC) Point Mugu and San Nicolas Island (SNI), in areas that could be affected as a result of implementation of the Proposed Action.

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, and traditional cultural properties (TCP) related to prehistoric/pre-contact (prior to European contact) and post-contact periods.

Archaeological resources include prehistoric and historic sites and artifacts. Archaeological resources can have a surface component, a subsurface component, or both. Prehistoric resources are physical properties resulting from human activities that predate written records, and include village sites, temporary camps, lithic scatters, shell middens, roasting pits, hearths, milling features, petroglyphs, rock features, and burials. Historic period resources include terrestrial and submerged archaeological resources that postdate the advent of written records in a region, and include building foundations, refuse scatters, hearths, wells, cisterns, and privies.

Architectural resources are elements of the built environment consisting of standing buildings or structures from the historic period. These resources include existing buildings, dams, bridges, lighthouses, and forts.

Prehistoric, historic, and/or contemporary locations of traditional events; sacred places; landscapes; and resource collection areas, including fishing, hunting, and gathering areas, may be TCPs. Traditional Cultural Properties 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. For example, one tribe has provided information to the Navy identifying the entirety of SNI as a TCP eligible for inclusion in the National Register of Historic Places (NRHP) (National Register).

Underwater archaeological resources can take the form of submerged prehistoric sites or isolated prehistoric artifacts; or can be submerged shipwrecks or aircraft, or pieces of ship components, such as cannons or guns. Submerged cultural resources are found throughout the PMSR.

3.10.2 Identification, Evaluation, and Treatment of Cultural Resources

Procedures for identifying, evaluating, and treating cultural resources on land and within state territorial waters (within 3 nautical miles [NM] of the coast) and United States (U.S.) territorial waters (within 12 NM of the coast) are contained in a series of federal and state 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, the Submerged Lands Act of 1953, 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 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 cultural 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. Consultation with the California State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation, Native American tribes, the public, and other interested parties is required by Section 106 of the NHPA. Consultation with Native American tribes is conducted government-to-government with federally recognized tribes, as reaffirmed by Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and will be accomplished as necessary for the Proposed Action. Programmatic Agreements (PAs) may be developed pursuant to 36 CFR Part 800.14 to establish a Section 106 program alternative that is tailored to the specific resources, actions, and stakeholders involved with the proposed undertaking.

Procedures for identifying and protecting terrestrial cultural resources are elaborated on in standard operating procedures as discussed in Chapter 5 (Standard Operating Procedures and Mitigation) developed for SNI and NBVC Point Mugu and described in the Integrated Cultural Resources Management Plans (ICRMPs) for SNI and NBVC Point Mugu (U.S. Department of the Navy, 2018a, 2019).

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 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. However, the federal government may transfer the title of an abandoned shipwreck to the state so long as the shipwreck falls within the jurisdiction of the state (43 U.S.C. Ch. 39: Abandoned Shipwrecks). Warships or other vessels used for military purposes at the time of their sinking retain sovereign immunity. According to the principle of sovereign immunity, foreign warships sunk in U.S. territorial waters are protected by the U.S. government, which acts as custodian of the sites in the best interest of the sovereign nation (32 CFR Part 767).

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.

3.10.3 Region of Influence

For purposes of this Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), the region of influence for cultural resources includes the PMSR and the area of potential effect (APE) associated with land-based facilities on NBVC Point Mugu and SNI (Figures 3.10-1 and 3.10-2).

The PMSR includes all offshore areas and islands under the Special Use Airspace and consists of 36,000 square miles (93,200 square kilometers) of ocean area. Potential effects on cultural resources within the PMSR are primarily related to underwater archaeological resources. Since the Proposed Action would not affect onshore cultural resources at the San Miguel, Santa Rosa, Santa Cruz, Anacapa, or Santa Barbara islands or Port Hueneme, they are not specifically addressed; however, they are included in discussions pertaining to the PMSR to the extent that underwater resources in proximity to these islands and Port Hueneme might be affected.

The APE for NBVC Point Mugu includes the Directed Energy (DE) Systems Integration Laboratory, and launch activities associated with Launch Complex Building 55, 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 historic resources (Figure 3.10-1).

The APE for SNI consists of the existing Land Impact Site, historically associated with the Standoff Land Attack Missile (SLAM) testing program, the Alpha Launch Complex, Rock Crusher Launch Site, and the DE site (Figure 3.10-2). The APE also encompasses a 30-meter buffer around each activity area.

3.10.4 Approach to Analysis

There are no proposed construction-related activities; therefore, the approach to analysis focuses on potential impacts to submerged resources within the PMSR and associated missile launch operations and DE activities that occur within the APE for NBVC Point Mugu and SNI.

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

The approach for assessing cultural resources includes defining the resource; presenting the regulatory requirements for identifying, evaluating, and treating the resource within established jurisdictional parameters; establishing the specific resource subtypes in the Study Area; identifying the data used to define the current conditions; and describing the method of impact analysis.

Regulation 36 CFR Part 800 requires federal agencies to take into account the effects that a proposed action would have on historic properties included in or eligible for inclusion in the NRHP. Cultural resources 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 in the NRHP. Evaluations and determinations of historic properties within the Study Area are the responsibility of the federal agency, which consults the California SHPO and appropriate Indian tribes (e.g., the Chumash and Luiseño bands of Indians).

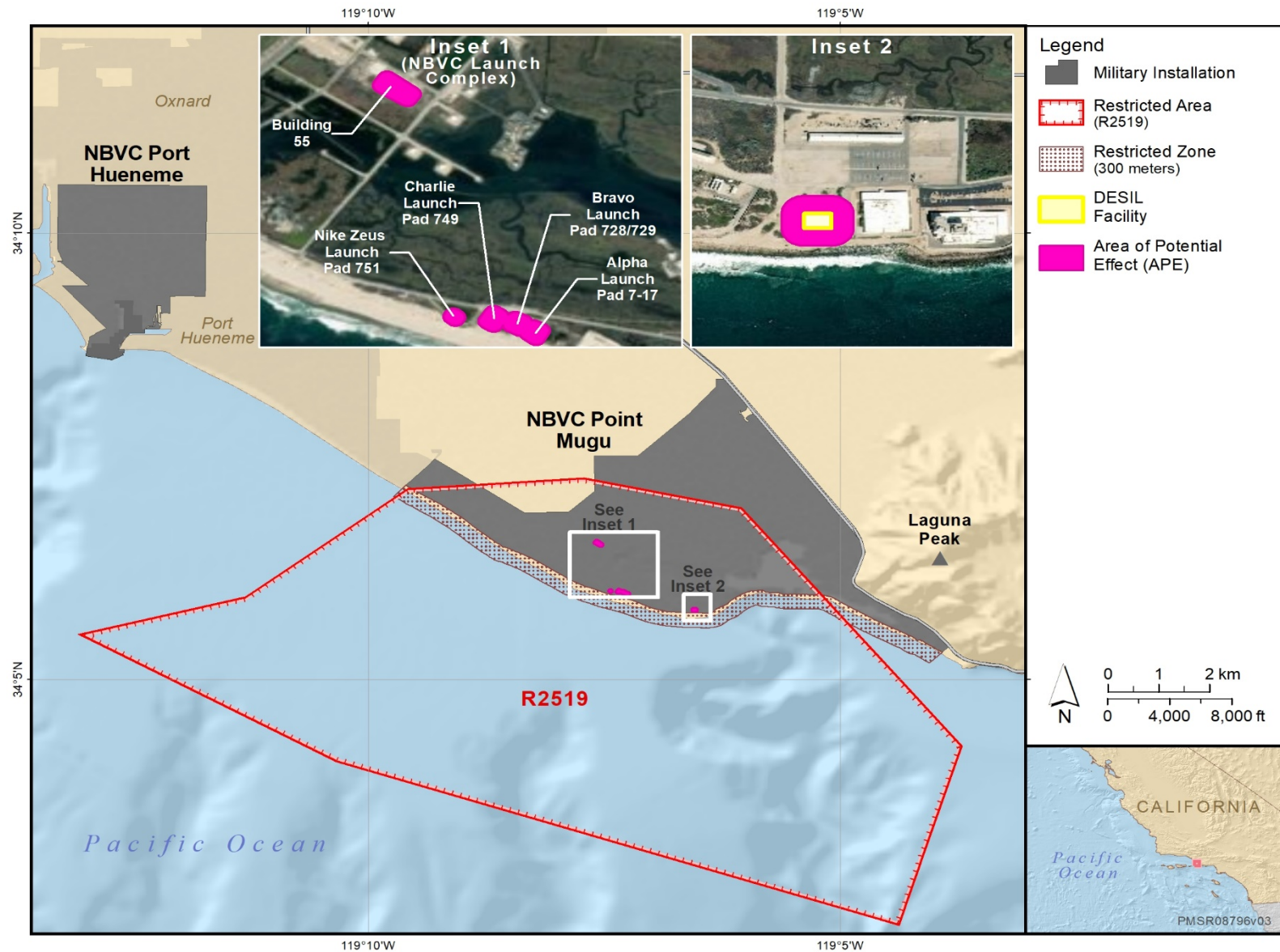


Figure 3.10-1: Areas of Potential Effect at NBVC Point Mugu

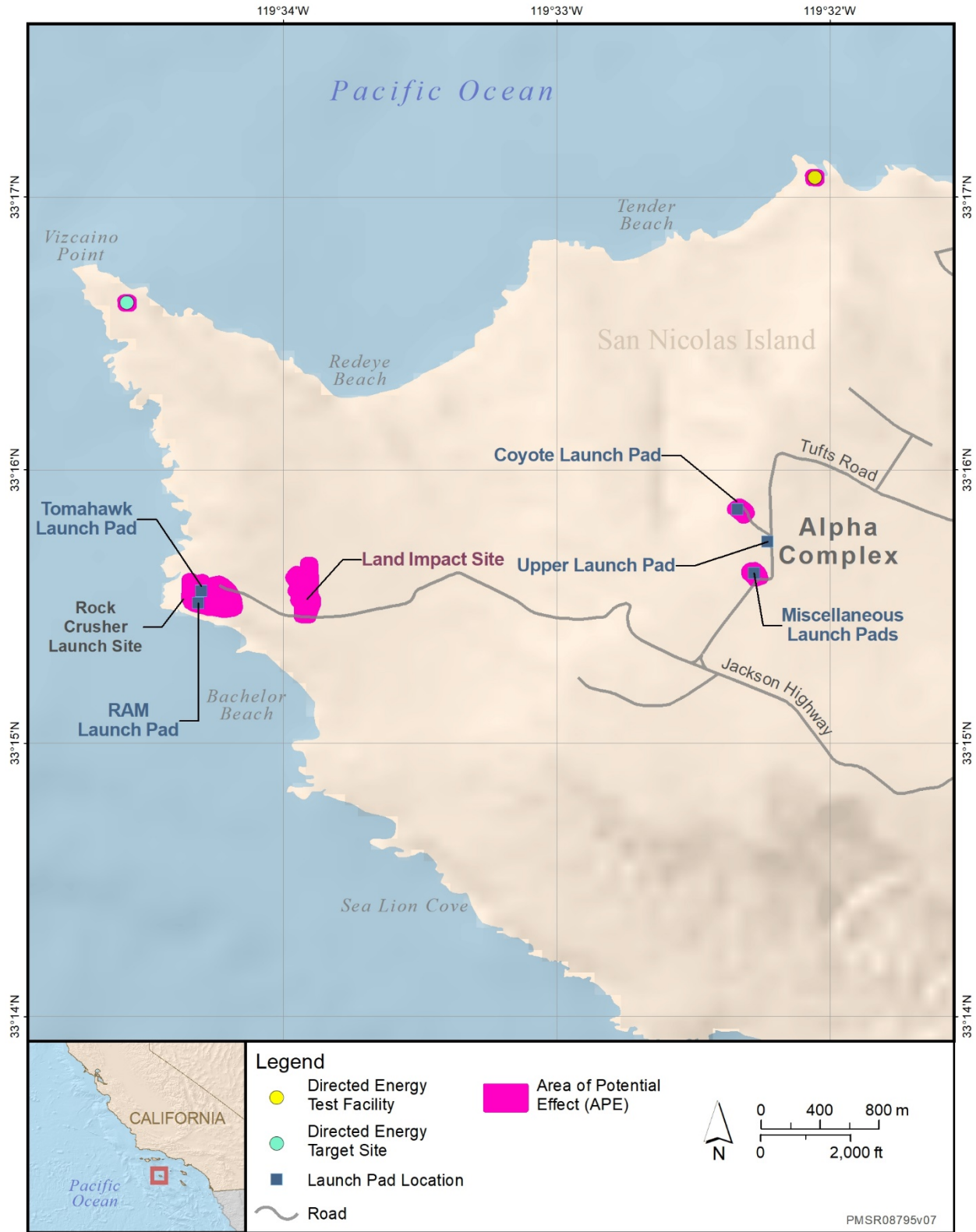


Figure 3.10-2: Areas of Potential Effect at San Nicolas Island

Properties are evaluated for nomination to the NRHP and for National Register eligibility using the criteria found in 36 CFR 60.4. Specifically, historic properties are evaluated on their quality of significance in American history, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that (1) are associated with events that have made a significant contribution to the broad patterns of our history; or (2) are associated with the lives of persons significant in our past; or (3) 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; or (4) have yielded, or may be likely to yield, information important in prehistory or history (U.S. Department of the Interior, 1997). A historic property also must possess integrity, defined as the ability of a property to convey its significance, to qualify for the NRHP. The seven aspects of integrity are: location, design, setting, materials, workmanship, feeling, and association.

Traditional Cultural Properties are assessed for integrity and evaluated in the same manner as other historic properties with reference to the National Register Criteria for Evaluation (36 CFR Part 60). These properties and their significance are often identified through consultations with American Indian tribes or other ethnic groups or cultures (National Register Bulletin 38: *Guidelines for Evaluating and Documenting Traditional Cultural Properties*) (Parker & King, 1998). If the TCP is associated with Native Americans, then the appropriate federally recognized Tribe(s) would be involved in its assessment and evaluation, and review its eligibility for listing in the NRHP as a historic property. When applicable, consultation with other affected groups provides the means to establish the importance of their TCPs. A TCP, as a historic property, must meet the eligibility criteria for listing in the National Register as well conform to Advisory Council on Historic Preservation guidelines.

3.10.4.1 Naval Base Ventura County Programmatic Agreement

NBVC has a PA for Port Hueneme, Point Mugu, and Laguna Peak. The PA serves as the NHPA compliance mechanism for NBVC. The 16 stipulations identify the installations and facilities covered by the PA, require historic properties work be conducted by individuals meeting professional qualifications for their field, require the development of ICRMPs, streamline the Section 106 process to allow NBVC personnel to determine the APE for undertakings and to make determinations of No Historic Properties Affected without SHPO consultation. The PA also allows NBVC personnel to make No Adverse Effect determinations without SHPO consultation and to develop ways to address potential impacts (U.S. Department of the Navy, 2018b). This PA does not pertain to undertakings in the PMSR; therefore, actions within the Sea Range shall be reviewed through the standard Section 106 process to ensure NHPA compliance.

3.10.4.2 Data Sources

Cultural resources information relevant to this EIS/OEIS was derived from a variety of available sources, including previous environmental documents, 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, online maps and data, and published sources, as cited.

Previous environmental documents used for general information include the Point Mugu Sea Range EIS/OEIS (U.S. Department of the Navy, 2002), the Environmental Assessment (EA) for Nonwarhead 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, 2010a), the EA for Countermeasures Testing and Training at Point Mugu Sea Range (U.S. Department of the Navy, 2013a), the EA for DE Test Facilities at SNI (U.S. Department of the Navy, 2013b), and the EA/Overseas EA for Point Mugu Sea Range Expansion of Unmanned Systems Operations (U.S. Department of the Navy, 2013c).

Previous cultural resources documents used for general information and information on terrestrial cultural resources include *CA-SNI-168 Data Recovery and Indirect Effect Area Investigations* (Rosenthal et al., 1997), *Section 110 National Register Eligibility Evaluations of Five Archaeological Sites on San Nicolas Island, California* (Byrd et al., 2014), the ICRMP for Point Mugu and Port Hueneme NBVC (U.S. Department of the Navy, 2010a), the NBVC Point Mugu and Port Hueneme ICRMP (U.S. Department of the Navy, 2018b), the ICRMP for SNI (U.S. Department of the Navy, 2012), and the NBVC, SNI ICRMP (U.S. Department of the Navy, 2019).

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, 2010b); a research report of *Recent Surveys of Certain Historic and Cultural Sites at San Nicolas Island* (Howorth, 1988); 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 (2020). Morris and Lima 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. Within the outer portion of the Sea Range, major data gaps exist regarding the presence of submerged cultural resources; virtually nothing is known of this area. The national and international shipwreck databases researched included the National Oceanic and Atmospheric Administration's Office of Coast Survey Advanced Wreck and Obstruction Information System, California State Lands Commission Shipwrecks database, and secondary sources of shipwreck information identified above. Since many of the shipwreck databases and secondary sources overlap and many federal agencies "share" data as well as secondary sources, the intent of this analysis is not to provide a definitive number of shipwrecks, obstructions, or hazards within a defined area, but to provide an overview of the potential resources in an area.

The online National Register Information System was reviewed to identify National Register-listed properties, historic districts, and National Historic Landmarks.

3.10.4.3 Cultural Context

Research suggests that the sea level rose steadily from about 18,000 years ago to about 7,500 years ago, whereupon it reached present-day levels. In California, PaleoIndian and Archaic period sites in coastal areas were submerged by the rising ocean. Many of these sites would not have been preserved as the encroaching ocean inundated, reworked, and redeposited sediments. However, PaleoIndian and Archaic period sites may have been preserved on inland areas and may include back barrier deposits or mainland shore deposits located behind large, nearshore islands; estuaries; and portions of coastal floodplains (U.S. Department of the Navy, 2018b). The NBVC Point Mugu and Port Hueneme ICRMP (U.S. Department of the Navy, 2018b) describes Native American occupation of the mainland areas beginning prior to 13,000 years ago. Southern California's offshore islands within the Sea Range include San Nicolas, Anacapa, Santa Cruz, Santa Rosa, and San Miguel. Archaeological evidence indicates that

beginning at least 13,000 years ago, Native Americans hunted, fished, and gathered shellfish on the islands. They also participated in an elaborate trading network between islands and the mainland through the use of canoes.

The maritime history along the U.S. West Coast is a history of exploration, imperial competition, and commercial adventurism. The period of exploration began at least as early as the first Spanish voyages northward from present-day Mexico in the 1530s, and by 1578 the British were encroaching on the Spanish monopoly along the coast of California. Undiscovered sunken vessels from early Spanish and British exploration, colonization, and trade may be present in coastal Southern California.

Although Spanish explorers first arrived in the mid-1500s, there were few encounters between the Indians and Spanish until the Franciscans arrived and missions were established in the mid-1700s. Their arrival had a devastating effect on mainland native people (U.S. Department of the Navy, 2018b). Decimated by disease, the remaining populations were relocated to villages next to Catholic missions. Island populations were most affected by seal and otter hunting in the early 19th century. On SNI, all native inhabitants were moved to the mainland by the mid-1800s. Ranching and fishing in the late 19th and 20th centuries were the major subsistence activities on the islands. Remains of Anglo and Chinese occupations can be found in abalone gathering camps, fishing camps, or ranch houses and outbuildings.

Military activities in the Sea Range 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).

3.10.5 Affected Environment

3.10.5.1 Point Mugu Sea Range

Archaeological resources within the PMSR are limited to ship and aircraft wrecks and an occasional isolated artifact that was lost from Native American watercraft during a prehistoric or historic voyage (U.S. Department of the Navy, 2010b). Historic shipwrecks are treated as underwater archaeological sites. Most shipwreck remains are likely to be found at harbors and at hazards on the western and eastern ends of the island.

There is a possibility that submerged prehistoric archaeological sites or isolated objects could exist in waters surrounding SNI. Submerged archaeological sites off the coast of SNI are most likely to occur within 1,640–3,280 feet (ft.) (500–1,000 meters [m]) of fish habitat, within 1,640 ft. (500 m) of rocky shore habitat, and within 1,640 ft. (500 m) of drinking water sources (U.S. Department of the Navy, 2010a). However, no underwater archaeological resources have been documented in the vicinity of the launch boundaries near Alpha Launch complex and the Building-807 complex. These areas are characterized as having low potential for submerged archaeological resources (U.S. Department of the Navy, 2002, 2010a). It is known from ethnographic literature that prehistoric peoples navigated the channel and traveled between the mainland and the Channel Islands. Treacherous waters and changing weather conditions likely resulted in disaster for some of these prehistoric voyages, and items carried aboard their canoes may have been lost. Precise locations of these isolated artifacts from failed canoe trips are not known because no systematic underwater survey has been undertaken to date. Isolated prehistoric artifacts have been reported by divers, but these events are rare. While isolated artifacts are not eligible for the NRHP, they may be indicative on an undetected pattern. These locations would have been occupied over 7,000 years ago, when sea levels were lower than current levels.

Submerged shipwrecks and planes comprise all of the documented historic resources in the Sea Range. Over 500 sunken vessels have been reported within the coastal waters of Southern California. However, precise locations are infrequent, with vague descriptive narratives of the area in which the ship was last known, or thought to have sunk, being provided. Morris and Lima (1996) compiled a database of 129 known shipwrecks and their locations within the Channel Islands National Park and National Marine Sanctuary, which is encompassed by the PMSR. These shipwrecks can sometimes be eligible for listing to the NRHP. According to National Register Bulletin 20, "A historic vessel is any craft built to navigate a waterway ... regardless of type of construction or motive of power employed, which meets the National Register criteria for evaluation." The vessel must have significance as one of five types (i.e., floating historic vessel, dry-berthed historic vessel, small craft, hulk, or shipwreck), retain the seven characteristics of integrity (i.e., location, design, setting, materials, workmanship, feeling, and association), and meet at least one of the four National Register eligibility criteria (Delgado, 1992).

Morris and Lima's research was reanalyzed in a 1999 Shipwreck Study (U.S. Department of the Navy, 1999), which reported that 195 shipwrecks were located within or near the PMSR, with 129 of them with plottable coordinates in Geographic Information Systems. The largest number of shipwrecks found within the PMSR is near Santa Rosa Island. These shipwrecks have occurred in the vicinity of Talcott Shoal, Sandy Point, Bee Rock, East Point, and Becher's Bay. Shipwrecks would have to be 50 years of age or older and meet the eligibility and integrity criteria for listing to the NRHP to be considered historic properties. Note that, in many cases, although a shipwreck is known to have occurred and its general coordinates are known, no wreckage has been located. A 2010 historic context study focusing on underwater resources identified 32 ships known to have wrecked within 2 miles of SNI (Table 3.10-1) (U.S. Department of the Navy, 2010b).

The Underwater Archaeology Branch of U.S. Department of the Navy Naval History and Heritage Command maintains a database of sunken military watercraft and aircraft losses, including those wrecks and losses within the PMSR (U.S. Department of the Navy, 2020). The database lists 31 sunken military watercraft and 92 aircraft losses. 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. A total of 12 of these shipwrecks have general locational data; 11 of the 12 wrecks are at a depth of 5,000 feet or deeper (one is at a depth of 2,400 feet). All of these losses occurred before 2004 and were likely addressed as part of the earlier studies.

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

Table 3.10-1: Shipwrecks Identified Within Two Miles of San Nicolas Island

Ship Name	Identification Number	Year Wrecked	Wreck Site
<i>John Begg</i>	Unknown	1824	Begg Rock, 7 miles from San Nicolas Island (SNI)
<i>Leon</i>	Unknown	1894?	Unknown
<i>Ranger</i>	111013	1897	Sand spit on eastern side of SNI?
<i>La Gironde</i>	140153	1901	Southwest shore of SNI, 3 miles from sand spit
<i>May</i> [schooner]	Unknown	1903	Southern end of SNI
<i>May</i> [launch]	Unknown	1909?	Unknown
<i>Selma</i>	Unknown	1916	Unknown (SNI)
<i>Lillian</i>	207500	1916	West side of SNI
<i>Coney Island</i>	Unknown	1926?	"Coney Point," northeast shore of SNI
<i>Miss Santa Barbara</i>	Unknown	1926	Unknown
<i>F.H. Hillman</i>	221695	1927	Southeast end of SNI
<i>New Moon</i>	217498	1931	Unknown
<i>Sport</i>	Unknown	1937	Unknown
<i>Nora II</i>	216272	1938	North shore of SNI, 1 mile from Coney Point
<i>Empress</i>	202834	1942	Unknown (SNI)
<i>C.W.W. 26</i>	175716	1943	Unknown (SNI)
<i>Steel Chemist</i>	252037	1949	South side of the northwest corner of SNI
<i>#4413</i>	176214	1951	Sand spit on eastern side of SNI
<i>America II</i>	Unknown	1952	Western side of SNI
<i>Ginger</i>	247604	1954	Unknown (SNI)
<i>Volga Boatman</i>	216498	1954	Unknown
<i>Makassar Strait</i>	ex. AVG-91/ ACV-91/CVE-91/ CVU-91	1962	Northwestern shore of SNI
<i>LCI</i> [2 vessels]	Unknown	1962–1964	"Tender Beach," northwest shore of SNI
<i>Deep Six</i>	Unknown	1963	0.5 mile from SNI
<i>Jazzbo</i>	Unknown	1963	Unknown (SNI)
<i>Margie A.</i>	258165/ex. LCVP C 20551	1970	500 yards off southwest end of SNI
<i>Thetis</i>	279267	1972	2,000 yards off eastern end of SNI
<i>Roughneck</i>	271277	1980	2 miles northeast of SNI
<i>Sara Jane</i>	255802	1984	Unknown (SNI)
<i>Cabildo</i>	ex. LSD-16	1983 or 1985	Western side of SNI
<i>YFU-5</i>	ex. LCT-592/ LSU-592/LCU-592/ YFU-5	Unknown	Northwestern shore of SNI, 0.5 mile east of Coney Point

The shipwrecks listed in the table above include fishing boats, barges, yachts, cargo carriers, passenger ships, freighters, and target ships. 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) (Schorr et. al.) The model also showed that few ships have been lost more than 10 NM from shore, and those that are lost are unlikely to be found given the depth to the ocean floor at that distance from shore (U.S. Department of the Navy, 2002).

In 2010, a historic context for shipwrecks that occurred between 1542 and 1965 within 1 mile 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, 2010b). Preliminary NRHP evaluations were made for the 15 shipwrecks that are believed to have occurred within 1 NM of SNI that are considered shipwrecks under the Abandoned Shipwrecks Act of 1988 (U.S. Department of the Navy, 2010b). The other cultural resource found submerged is the Grumman Avenger, a government plane that was possibly ditched off Santa Cruz Island due to mechanical problems. However, none of the shipwrecks or downed aircraft are listed in or have been determined eligible for listing in the NRHP.

Submerged lands of Point Mugu include the area that extends to the mean high-tide line. It is possible that underwater cultural resources lie within the immediate subsurface tidal zone off Point Mugu. However, submerged cultural resources in this area have not been identified.

3.10.5.2 Naval Base Ventura County Point Mugu

For NBVC Point Mugu, no archaeological sites are listed in the NRHP, and three sites have been determined eligible for the NRHP. These sites are located outside the APE.

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 prehistoric sites. Fourteen historic properties on Point Mugu have been determined eligible for the NRHP: 11 structures, including Building PM-55 and the associated Launch Complex (formerly the Baker Complex; Buildings PM-727, PM-728, and PM-729 and associated launch pads), 2 prehistoric archaeological sites, and 1 historic era archaeological site (U.S. Department of the Navy, 2018b). Building 55 and the associated Launch Complex are the only sites within the APE (see Figure 3.10-1).

Building PM-55 and the associated launch pads are considered an exceptionally significant Cold War-era resource and was determined eligible for listing on the NRHP under criteria A and C (U.S. Department of the Navy, 2018b). Since Building PM-55 and the Launch Complex would continue as target and launch facilities, the Proposed Action is not considered an undertaking that adversely affects the historic property because the building's historic or current use would not be altered (U.S. Department of the Navy, 2002).

3.10.5.3 San Nicolas Island

SNI has been the subject of archaeological investigations for at least 100 years, including a complete archaeological survey of the island. During these archaeological investigations, 584 archaeological sites have been recorded across the island. These include kitchen middens, food processing sites, stone quarry sites, burial sites, petroglyph sites, and village areas. Of the 584 sites, 1 site has been formally determined eligible for listing to the NRHP (CA-SNI-169), 1 site has been formally determined not eligible for the NRHP (CA-SNI-170), and 583 sites are unevaluated and potentially eligible (U.S. Department of the Navy, 2019). Many of the other archaeological sites on SNI have preliminary eligibility recommendations. Human remains have been recovered from across the island as well as from the sites on the western end of SNI (U.S. Department of the Navy, 1998).

Table 3.10-2 identifies sites within the SNI APE (i.e., the Land Impact Site, the Rock Crusher Site, the Alpha Launch Complex, and the DE Test Facility including a 30m buffer around each activity area) (see Figure 3.10-2). The Rock Crusher Site Launch Complex was determined not eligible (U.S. Department of the Navy, 2019).

Table 3.10-2: Archaeological Sites in the APE on SNI*

Location	State Site No	Age	Site Type	NRHP Eligibility
Within APE	CA-SNI-12	Prehistoric	Habitation with remains	Eligible
Within APE	CA-SNI-61	Prehistoric	Habitation	Ineligible
Within APE	CA-SNI-44	Prehistoric	Multi-use processing	Ineligible
Within APE	CA-SNI-41	Prehistoric	Habitation with remains	Eligible
Within APE	CA-SNI-168	Prehistoric	Habitation with remains	Eligible
Adjacent to APE	CA-SNI-169	Prehistoric	Habitation	Eligible

Note: APE = Area of Potential Effect, NRHP = National Register of Historic Places

*see Figure 3.10-2

In 1998, the Navy prepared an EA for what was then the SLAM Impact Site (referred to in this EIS/OEIS as the Land Impact Site) (U.S. Department of the Navy, 1998), which assessed potential impacts to prehistoric archaeological resources within a large APE. As part of the analysis, the Navy contracted an archaeological services company to conduct a field investigation and sampling program of the target site and an area extending 1/2 mile out from the initial target area to the north in the direction of missile flights (Rosenthal et al., 1997). This survey covered archaeological site CA-SNI-168, which is collocated with the initial SLAM target site, the three nearest known archaeological sites to the target location: CA-SNI-169, CA-SNI-170, and CA-SNI-171, and each site's midden deposit (U.S. Department of the Navy, 1998). The archaeological investigations determined sites CA-SNI-168, CA-SNI-169, and CA-SNI-171 eligible for inclusion in the NRHP and site CA-SNI-170 as not eligible for listing in the NRHP (Rosenthal et al., 1997). CA-SNI-171 was determined to be outside the APE of that EA. In consultation with the SHPO, the Navy mitigated through data recovery, the anticipated effects to CA-SNI-168. Plans were developed to mitigate impacts to CA-SNI-169; however, those mitigation efforts were not implemented (U.S. Department of the Navy, 1998).

The DE Test Facilities EA identified potential impacts to prehistoric archaeological resources (CA-SNI-12) (U.S. Department of the Navy, 2013b). Project construction plans were reanalyzed and a revised EA determined that there would be no impacts to the archaeological site associated with DE testing and personnel training. The SHPO concurred with the findings (U.S. Department of the Navy, 2015).

During consultation for another undertaking on SNI, the Pechanga Band of Luiseno Indians' Cultural Resources Department provided information to the Navy identifying two additional cultural resources with the potential of being historic properties. These two potential historic properties identified by the Pechanga are a TCP and a historic district. In response to the Pechanga Tribe's identification of a potential TCP, the Navy requested funds for a contracted effort to complete an ethnographic study of SNI to determine whether or not it is a TCP. The Pechanga Tribe also asserts that each archaeological site on the island is a contributing element to the overall historic district. The Navy has also requested funds to study whether or not each of the archaeological sites is a contributing element to an overall historic district. Being cognizant of the sensitivity of Indian tribes towards sharing confidential information regarding areas of traditional cultural significance, the Navy has indicated that, as requested by the Pechanga Tribe, it would withhold from public disclosure any information about such resources, pursuant to CFR 800.11(c)(1). For the purposes of the Section 106 consultation for the current project, the Navy will view SNI as a TCP eligible for inclusion in the NRHP and will also consider the archaeological district as eligible for the NRHP.

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 submerged cultural resources within U.S. territorial waters, resources near land-based launch and impact sites, and resources on which debris may land. Potential impacts on cultural resources would be from target and weapons debris and sonic booms associated with weapons tests activity scenarios (air-to-air, air-to-surface, surface-to-air, surface-to-surface, and subsurface-to-surface) as described in detail in Appendix A (Point Mugu Sea Range Scenario Descriptions).

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. 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 cultural resources.

3.10.6.2 Alternative 1 (Preferred Alternative)

A comparison of operational tempo proposed for each alternative, and proposed types and level of activities, are provided in Section 2.2.3 (Alternatives Carried Forward).

EAs were prepared for laser testing and training (U.S. Department of the Navy, 2010a), countermeasures testing (U.S. Department of the Navy, 2013a), DE systems (U.S. Department of the Navy, 2013b), and unmanned systems (U.S. Department of the Navy, 2013c); all of which determined that there were no impacts to cultural resources from these activities. The following provides an activity-based analysis of impacts to cultural resources associated with Alternative 1.

Air-to-Air Operations. Under Alternative 1, potential impacts to cultural resources from air-to-air operations are limited to two sources, military expended materials (MEM) and sonic booms. Military expended materials are missile and target debris, non-explosive munitions, and explosive munitions, which are small-to-medium-sized objects. These materials may fall into the ocean and affect shipwrecks and submerged archaeological resources.

Air-to-air operations occur over the offshore waters of the PMSR. Shipwrecks have been recorded in offshore waters, but most shipwrecks are located near islands and the mainland. A predictive model of shipwreck locations within the PMSR indicates that most shipwrecks are located less than 0.5 NM from islands and the mainland (U.S. Department of the Navy, 1999, 2002).

The likelihood of MEM impacting shipwrecks is low since air-to-air operations occur farther from the islands, and there is a low density of historic properties located outside of nearshore areas where most shipwrecks occur. Shipwrecks located more than 10 NM from land are unlikely to be affected by debris because they occur at a low density (fewer than 20 ships over 36,000 square miles [93,200 square kilometers]) and at such depths (greater than 3,000 ft. [914 m]) that the debris is unlikely to affect any resources as a result of low terminal velocity (U.S. Department of the Navy, 2002). Further, there is a low potential for MEM to impact these resources since the MEM is small, and the terminal velocity reached by sinking objects is relatively slow (compared to falling objects in air). As a result, debris is

unlikely to land with sufficient force to damage any object on the sea bottom and would affect only a minute portion of the seabed (U.S. Department of the Navy, 2010a, 2010b). Moreover, none of the shipwrecks within 1 NM of SNI are considered significant cultural resources and were determined to have little or no research potential (U.S. Department of the Navy, 2010b).

Underwater archaeological resources are also more likely to occur in nearshore areas less than 1 NM from land. Since air-to-air activities take place primarily over deep water areas of PMSR, and the resulting debris patterns do not affect areas less than 1 NM from land, there would be no adverse effect on cultural resources from air-to-air operations.

Impulsive noise, such as that resulting from supersonic overflights (sonic booms) can create intense shock waves that cause airborne vibration. Repeated vibration, over time, has the potential to degrade or destroy sensitive structural or cultural elements. Supersonic aircraft flights that are associated with PMSR activities can occur and are usually limited to altitudes above 30,000 ft. and in locations more than 30 NM from shore. Several factors influence sonic booms: weight, size, and shape of the aircraft; altitude; flight paths; and atmospheric conditions. A larger and heavier aircraft displaces more air and creates more lift to sustain flight, compared with small, light aircraft. Therefore, larger aircraft create sonic booms that are stronger and louder than those of smaller, lighter aircraft. Boom overpressure dissipates with depth of water (e.g., to a tenth of initial value at a depth of about 122 ft.) (U.S. Department of the Navy, 2002). Further, the underwater sound field due to transmitted sonic boom waveforms primarily consists of low-frequency components, and frequencies greater the 20 Hz have been found to be difficult to observe at depths greater than 33 ft. (10 m).

Assuming these acoustic sources are limited to in-water activities, acoustic waves associated with large caliber gun blasts, projectile strikes, and supersonic projectiles in flight could only enter the water in a narrow cone beneath the sound source. The region of underwater sound influence from a single traveling shell would be relatively narrow, and the duration of sound influence would be brief at any location. It would have little or no effect on historic properties.

Anti-surface missiles and projectiles explode at or near the water surface (less than 10 m above the surface). Shock waves from these types of explosions occur within areas of deep water and would dissipate before they reach historic resources on the seafloor; and therefore would not affect any cultural resources (U.S. Department of the Navy, 2018c).

There is a low likelihood of MEM (missile and target debris) or vibration from sonic booms and surface explosions reaching submerged cultural resources, therefore impacts from these sources will not adversely affect cultural resources within the PMSR.

Based on the analysis presented above, no significant impact on cultural resources within the PMSR or near NBVC Point Mugu and SNI would occur as a result of air-to-air operations.

Air-to-Surface Operations. Under Alternative 1, potential impacts to submerged cultural resources are limited to MEM and sonic booms. Potential effects to cultural resources in offshore areas are unlikely because of the sparse distribution of resources as described under air-to-air operations. As discussed in the air-to-air operations section, impacts on submerged resources are also unlikely because of the small size of the debris and the likelihood that it only affects the surface of any submerged resource and additional debris would have little effect on submerged cultural resources.

Anti-surface missiles and projectiles exploding at or near the water surface (less than 10 m above the surface) would produce vibrations within areas of deep water which would dissipate before they

reached historic resources on the seafloor (U.S. Department of the Navy, 2018c). Therefore, effects from missile and target debris and vibration from sonic booms during air-to-surface operations would not adversely affect known or unknown submerged cultural resources and no significant impacts to historic properties within the PMSR or near NBVC Point Mugu and SNI would occur as a result of air-to-surface operations.

Air-to-surface operations include the use of the Land Impact Site on SNI. The Land Impact Site has been in use since 1989. In the mid-1990s, in support of an EA for a new weapon system, the Navy conducted archaeological investigations of sites within the APE of the SLAM target area. These investigations included survey, indirect effect area investigations, and ultimately culminated in data recovery excavations at one site (Rosenthal et al., 1997). These investigations determined sites CA-SNI-168, CA-SNI-169, and CA-SNI-171 were eligible for the NRHP and that site CA-SNI-170 was not eligible for the NRHP. Portions of CA-SNI-168 within the Land Impact Site were mitigated by a data recovery program that was conducted in compliance with federal standards (U.S. Department of the Navy, 1998). After initial evaluations of sites within the SLAM target APE, the Navy consulted with SHPO to mitigate anticipated effects to CA-SNI-168 from the creation and operation of the SLAM target. The mitigation was data recovery. No tribes were consulted at that time since no tribe was known to have attached religious and cultural significance to historic properties on SNI. The Navy developed procedures to avoid or minimize potential adverse effects to other portions of the site not subject to the data recovery efforts. Portions of another archaeological site, CA-SNI-169, are also located within the Land Impact Site's APE. Archaeological sampling at site CA-SNI-169 was conducted in 1997 and the site was also recommended as NRHP eligible (U.S. Department of the Navy, 1998). Protection procedures for sites CA-SNI-168 and CA-SNI-169 were detailed in the 1998 EA for the SLAM site (U.S. Department of the Navy, 1998). Protection procedures included conducting archaeological monitoring of corrective clean up actions following a test to minimize effects to archaeological sites. Based on the analysis in the EA, the Navy determined that the continued use of the facility would not have an adverse effect on the site (U.S. Department of the Navy, 1998).

The SNI ICRMP contains guidance for complying with the NHPA and NAGPRA, and includes standard operating procedures for the inadvertent discovery of cultural resources (See Chapter 5, Standard Operating Procedures and Mitigation for details on these procedures). Combined, the guidance and procedures are intended to minimize effects to terrestrial cultural resources on SNI, including those near the Land Impact Site (i.e. SNI-168 & SNI-169) (U.S. Department of the Navy, 2019).

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 missile and target activity. Therefore, air-to-surface operations would not adversely affect cultural resources and no significant impacts on cultural resources would occur on SNI.

Surface-to-Air Operations. Under Alternative 1, potential impacts to cultural resources from surface-to-air operations are limited to MEM and sonic booms affecting shipwrecks and submerged archaeological resources. Potential effects on these cultural resources would be the same as those discussed above under air-to-air operations. Therefore, effects from missile and target debris and vibration from sonic booms and surface explosions during surface-to-air activities would not adversely affect submerged cultural resources. These activities would have no significant impact on cultural resources within the PMSR or at NBVC Point Mugu and SNI.

At NBVC Point Mugu, Building PM-55 and the Launch Complex (Buildings PM-727, PM-728, and PM-729) have been determined to be significant Cold War-era resources and determined eligible for listing on the NRHP. Under Alternative 1, there would be no change in the type or tempo of activities and the resources would continue to be used as a target launch facility and maintained as appropriate. Therefore, there would be no adverse effect on Building 55 or the Launch Complex and no significant impacts would occur as a result of surface-to-air operations under Alternative 1.

Under Alternative 1, the Navy would use the DE Test Facility and other launch pads on SNI for surface-to-air testing activities; however, there would be no changes to the activities as previously analyzed under the DE Test Facilities EA. Therefore, surface-to-air operations would not adversely affect cultural resources and no significant impacts on cultural resources would occur on SNI.

Surface-to-Surface Operations. Under Alternative 1, potential impacts to cultural resources are limited to MEM and sonic booms. The potential effects would be the same as those discussed above under surface-to-air and air-to-surface operations. Therefore, effects from surface-to-surface activities would not adversely affect cultural resources and no significant impacts on cultural resources within the PMSR would occur.

Potential effects on cultural resources at NBVC Point Mugu for Building PM-55 and the Launch Complex would be the same as those discussed above under air-to-air operations. Therefore, there would be no adverse effect on Building 55 or the Launch Complex and no significant impacts would occur as a result of surface-to-surface operations under Alternative 1.

At SNI, aerial target launches occur at the existing Alpha Launch Complex and the Rock Crusher Launch Site (see Figure 3.10-2). At SNI, aerial target launches occur at the existing Alpha Launch Complex and the Rock Crusher Launch Site (see Figure 3.10-2). The Alpha Launch Complex is typically used for launching the GQM-163A supersonic target. The Rock Crusher Launch Site is used to launch both targets and missiles. These launch complexes would continue to be used for their current purposes and maintained appropriately. As noted above, site CA-SNI-61 (which is in or adjacent to the Alpha complex) was determined not eligible for NRHP listing (Byrd et al., 2014). Therefore, there would be no adverse effects and no significant impacts would occur as a result of surface-to-surface operations under Alternative 1.

Under Alternative 1, the Navy would use the DE Test Facility for surface-to-surface testing activities; however, there would be no changes to the activities as previously analyzed under the DE Test Facilities EA. Also, 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 missile and target activity. Therefore, surface-to-surface operations would not adversely affect cultural resources and no significant impacts on cultural resources would occur on SNI.

Subsurface-to-Surface Operations. Under Alternative 1, potential impacts to on cultural resources would be the same as those discussed above under surface-to-surface operations. Therefore, impacts from MEM and vibrations from underwater explosions during subsurface-to-surface activities would not adversely affect known or unknown submerged cultural resources and no significant impacts on cultural resources within the PMSR would occur.

3.10.6.3 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).

While testing and training activities under Alternative 2 would increase from the environmental baseline conditions (refer to Table 2-2), these increases would not change the impact analysis as presented under Alternative 1 for air-to-air, air-to-surface, surface-to-air, surface-to-surface, and subsurface-to-surface operations. Therefore, there would be no adverse effects as a result of testing and training operational scenarios and no significant impacts on cultural resources would occur within the PMSR or on NBVC Point Mugu and SNI.

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REFERENCES

- Byrd, B. F., J. Berg, A. R. Whitaker, and H. Sistrunk. (2014). *National Register Eligibility Evaluations of Five Archaeological Sites on San Nicolas Island, California*. Davis, CA: Far West Anthropological Research Group, Inc.
- Delgado, J. P. (1992). *Nominating historic vessels and shipwrecks to the National Register of Historic Places*. Washington, DC: U.S. Department of the Interior, National Park Service.
- Howorth, P. C. (1988). *Recent Surveys of Certain Historic and Cultural Sites at San Nicolas Island An Interim Report*. Santa Barbara, CA.
- Morris, D. P., and J. Lima. (1996). *Channel Islands National Park and Channel Islands National Marine Sanctuary: Submerged Cultural Resources Assessment*. Washington, DC: National Park Service, Systemwide Archaeological Inventory Program.
- National Park Service. (2018). *Abandoned Shipwreck Act Guidelines*. Retrieved from <https://www.nps.gov/archeology/submerged/intro.htm#top>.
- Parker, P. L., and T. F. King. (1998). *Guidelines for evaluating and documenting traditional cultural properties*. Washington, DC: U.S. Department of the Interior, National Park Service.
- Rosenthal, J., P. Jertberg, J. C. Brown, R. A. Mariani Jr., L. L. Mitchell, T. A. Wake, and W. L. Giddens. (1997). *Data Recovery at CA_SNI-168 and Indirect Area Investigations Program*. Irvine, CA: Petra Resources, Inc.
- Schorr et. al. (Unpublished). *LMR Program Participant Updates*.
- U.S. Department of the Interior. (1997). *How to Apply the National Register Criteria for Evaluation*. Washington, DC: National Park Service.
- U.S. Department of the Navy. (1998). *Environmental Assessment for Nonwarhead Standoff Land Attack Missile (SLAM) and Future Model Slam Firings*. Point Mugu, CA: Naval Air Warfare Center, Weapons Division.
- U.S. Department of the Navy. (1999). *Shipwreck Study for Point Mugu Sea Range Environmental Impact Statement*. Point Mugu, CA: Naval Air Warfare Center Weapons Division.
- U.S. Department of the Navy. (2002). *Final Environmental Impact Statement/Overseas Environmental Impact Statement Point Mugu Sea Range*. Point Mugu, CA: Naval Air Systems Command, Naval Air Warfare Center Weapons Division.
- U.S. Department of the Navy. (2007). *Environmental Assessment for SSM-1 KAI Missile Testing at San Nicolas Island*. Point Mugu, CA: Naval Air Warfare Center Weapons Center, Weapons Division.
- U.S. Department of the Navy. (2010a). *Integrated Cultural Resources Management Plan for Point Mugu and Port Hueneme, Naval Base Ventura, California*. San Diego, CA: Naval Facilities Engineering Command Southwest.
- U.S. Department of the Navy. (2010b). *Historic Context Study to Develop a Historic Theme for Shipwrecks Around San Nicolas Island*. San Diego, CA: Naval Facilities Engineering Command Southwest.
- U.S. Department of the Navy. (2012). *Integrated Cultural Resources Management Plan for San Nicolas Island, Naval Base Ventura County, California*. San Diego, CA: Naval Facilities Engineering Command Southwest.

- U.S. Department of the Navy. (2013a). *Environmental Assessment Point Mugu Sea Range Countermeasures Testing and Training*. Point Mugu, CA: Naval Air Warfare Center.
- U.S. Department of the Navy. (2013b). *Environmental Assessment Directed Energy Test Facilities at San Nicolas Island*. Point Mugu, CA: Naval Air Warfare Center, Weapons Division.
- U.S. Department of the Navy. (2013c). *Final Environmental Assessment / Overseas Environmental Assessment Point Mugu Sea Range Expansion of Unmanned Systems Operations*. Point Mugu, CA: Naval Air Warfare Center Weapons Division.
- U.S. Department of the Navy. (2015). *Final Environmental Assessment - Directed Energy Test Facilities at San Nicolas Island*. Point Mugu, CA: Naval Air Warfare Center, Weapons Division.
- U.S. Department of the Navy. (2018a). *Final Integrated Cultural Resources Management Plan for Naval Base Ventura County, San Nicolas Island*. San Diego, CA: Naval Facilities Engineering Command, Southwest.
- U.S. Department of the Navy. (2018b). *Final Integrated Cultural Resources Management Plan for Naval Base Ventura County, Point Mugu and Port Hueneme*. San Diego, CA: Naval Facilities Engineering Command, Southwest.
- U.S. Department of the Navy. (2018c). *Hawaii-Southern California Training and Testing Final Environmental Impact Statement/Overseas Environmental Impact Statement*. Pearl Harbor, HI: Naval Facilities Engineering Command, Pacific.
- U.S. Department of the Navy. (2019). *Final Integrated Cultural Resources Management Plan for Naval Base Ventura County, San Nicolas Island*. San Diego, CA: Naval Facilities Engineering Command, Southwest.
- U.S. Department of the Navy. (2020). *Partial List of U.S. Navy Sunken & Terrestrial Military Craft (Point Mugu Sea Range)*. Washington Navy Yard, DC: Naval History and Heritage Command Underwater Archaeology Branch.
- Zander, C. M., and O. Varmer. (1996). Closing the gaps in domestic and international law: Achieving comprehensive protection of submerged cultural resources. *Contested Waters*, 1(3/4), 1–11.