



# **Silver Strand Training Complex**

## **Environmental Impact Statement**

Commander  
United States Navy Pacific Fleet

*Lead Agency:*  
Department of the Navy

*Action Proponent:*  
United States Pacific Fleet

*Cooperating Agency:*  
Department of Commerce  
National Oceanographic and Atmospheric Administration  
National Marine Fisheries Service

Chapters 1-9

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**COVER SHEET**

**ENVIRONMENTAL IMPACT STATEMENT**

**SILVER STRAND TRAINING COMPLEX**

Lead Agency for the EIS: U.S. Department of the Navy (Navy)

Title of the Proposed Action: Silver Strand Training Complex (SSTC)

Affected Jurisdiction: County of San Diego, Cities of Coronado and Imperial Beach

Designation: Final Environmental Impact Statement (FEIS)

**Abstract**

This FEIS has been prepared by the Navy in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508), and Navy Procedures for Implementing NEPA (32 CFR 775). Three alternatives are analyzed in this FEIS. The No Action Alternative would continue baseline training activities of the same types, without change in the nature or scope of military activities. Implementation of Alternative 1 would increase training tempo from baseline conditions and add new types of training, conduct existing routine training in additional locations within SSTC established training areas, introduce new platforms and equipment into training, and increase access and availability to existing beach and inland training areas. Alternative 2 is identical to Alternative 1 except that it further increases access to beach training areas.

This FEIS addresses the potential environmental impacts that result or could result from activities under the No Action Alternative, Alternative 1, and Alternative 2. Environmental resource topics evaluated include land use and recreation; geology and soils; air quality; hazardous materials and waste; water resources; acoustic environment (terrestrial); marine biological resources; fish; marine mammals; sea turtles; terrestrial biological resources; birds; cultural resources; transportation and circulation; socioeconomics, environmental justice, and protection of children; and public health and safety.

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## **ES 1 EXECUTIVE SUMMARY**

### **ES 1.1 INTRODUCTION AND BACKGROUND**

The National Environmental Policy Act of 1969 (NEPA) (Title 42 United States Code [U.S.C] 4321 *et seq.*) requires federal agencies to examine the environmental effects of major federal actions in a detailed public document that provides an assessment of the potential effects on human, natural, or physical environment. The United States (U.S.) Department of the Navy (Navy) has prepared this Environmental Impact Statement (EIS) to assess the potential environmental impacts associated with ongoing and proposed naval training activities within the Navy's Silver Strand Training Complex (SSTC) and southern nearshore areas of the Naval Air Station North Island (NASNI). Specifically, the Navy is proposing to continue current training and test and evaluation (T&E) activities conducted within the study area, increase training tempo from baseline conditions, conduct new types of training, conduct current routine training at additional locations within SSTC established training areas, introduce new platforms and equipment, and increase access and availability to existing beach and inland training areas. The Navy is the lead agency for the EIS, and the National Marine Fisheries Service (NMFS) is a cooperating agency for this EIS pursuant to 40 Code of Federal Regulations § 1501.6.

SSTC has been used by the Navy for over 60 years and is located on, and adjacent to, the Silver Strand, a narrow, sandy isthmus separating the San Diego Bay from the Pacific Ocean. SSTC is divided into two non-contiguous areas: SSTC-North (SSTC-N) and SSTC-South (SSTC-S). SSTC-N includes land areas on the northern-half of the Silver Strand peninsula, as well as adjacent nearshore waters of the Pacific Ocean and the San Diego Bay. SSTC-S includes land on the southern-end of the Silver Strand peninsula, as well as adjacent nearshore waters of the Pacific Ocean. SSTC-N and SSTC-S are separated by the Silver Strand State Beach. The NASNI training area is separate from SSTC, but it is used for similar types of training: it is composed of the beaches and near shore waters from Breaker's Beach to Zuniga Jetty, west of the City of Coronado. These areas are depicted in Figure ES-1. The Navy is not proposing to expand the geographic area of SSTC or the NASNI training area.

### **ES 1.2 STRATEGIC IMPORTANCE OF THE SSTC**

SSTC plays a vital part in the execution of the operational readiness mandate. SSTC has historically been, and continues to be, a critical training range for west coast naval amphibious, special warfare, and mine countermeasure activities.

#### **ES 1.2.1 SSTC Mission**

The mission of SSTC is to support U.S. Navy and Marine Corps amphibious, special warfare, and mine countermeasure training by providing local land, sea, and airspace support services; materiel; and training facilities that will help Naval and Marine Corps forces achieve and maintain the highest level of operational readiness.

#### **ES 1.2.2 Strategic Attributes of SSTC**

SSTC is critical to Navy training programs because of its unique combination of attributes that cannot be duplicated anywhere else in the world. These attributes are described below.

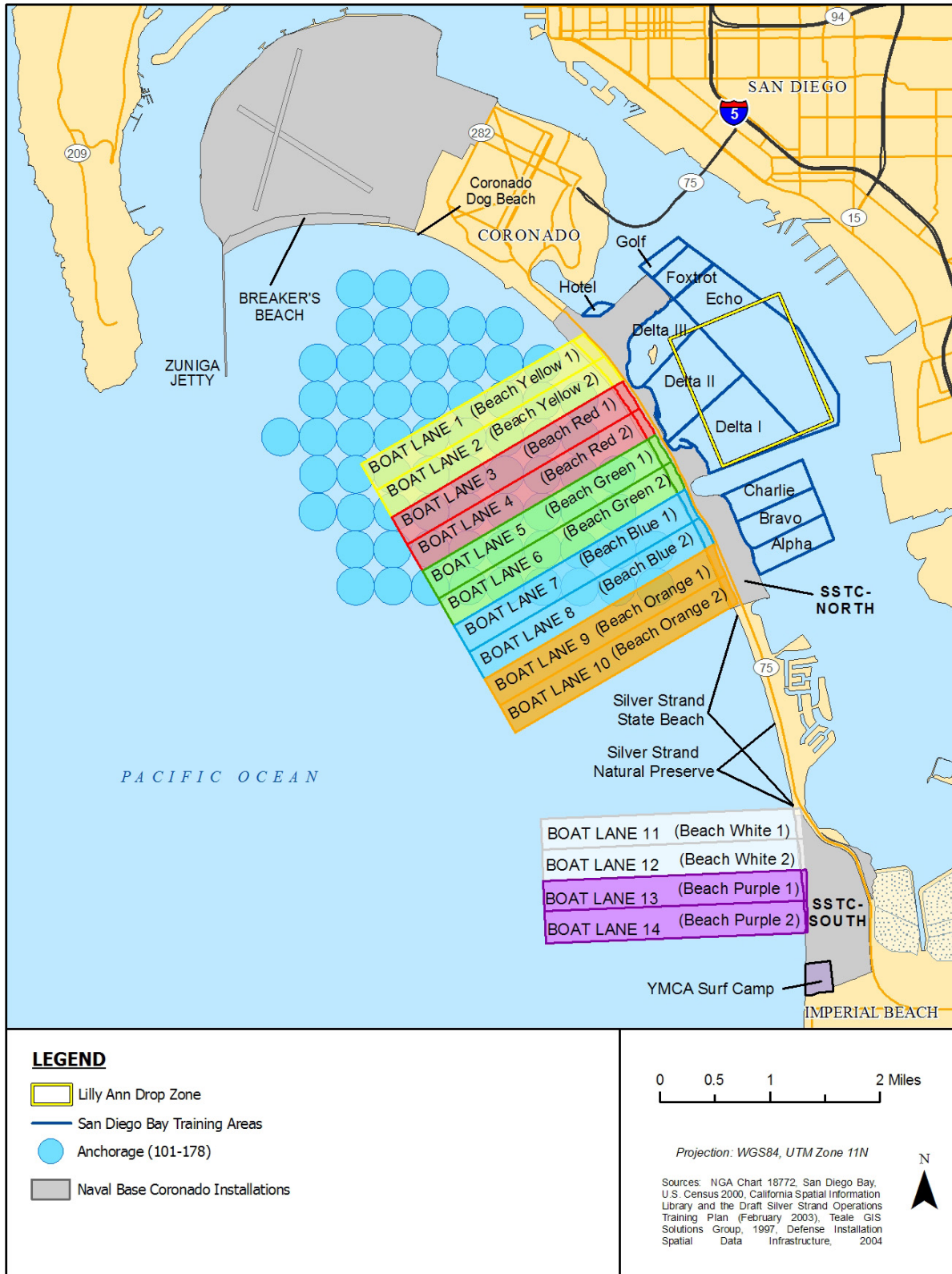


Figure ES-1: Silver Strand Training Complex

**Proximity to the Homeport of San Diego.** Southern California is home to the nation's largest concentration of naval forces. One-third of the U.S. Pacific Fleet makes its homeport in San Diego, including two aircraft carriers (with plans to homeport three), over 70 surface combatant ships, amphibious ships, and submarines; several aviation squadrons; and their officers and crews. These naval forces receive support from a range of naval installations in San Diego, including, Naval Amphibious Base (NAB) Coronado, NASNI, Naval Outlying Field (NOLF) Imperial Beach, Naval Base Point Loma, and Naval Base San Diego. SSTC's central location among these installations makes it a critical training range for multiple Navy commands headquartered on the installations. These commands are described in Section 1.4.3.

Local installations provide critical support to training on SSTC, including military command oversight for training, berthing and maintenance for vessels and aircraft used in training, housing for personnel being trained at SSTC, medical services for trainees, depots to supply training materials, and research and development services. The proximity of SSTC to equipment, personnel, facilities, and organizational services that are necessary for training at SSTC, is vital to the execution of Navy training. SSTC provides an efficient training area for commands that are headquartered in San Diego; thereby enabling the commands to meet the aggressive schedules through which groups of trainees are cycled each year. Keeping up with these schedules is necessary to meet the manning needs of the Fleet and ensure readiness for troop deployment.

**Proximity to Other Training Ranges in the Southwest.** The Navy manages a concentrated network of non-contiguous training ranges in the southwestern United States, including SSTC. This network of ranges includes San Clemente Island, NASNI, Naval Air Facility El Centro, NOLF Imperial Beach, Naval Air Station Fallon, Remote Training Site Warner Springs, Naval Air Weapons Station China Lake, Camp Michael Monsoor, Camp Morena and ocean and air areas (Warning Area [W]-291) off the coast of Southern California. This network anchors a west coast regional training capability where each range provides unique, but complementary training resources for different levels and types of training; and it is the most capable and heavily used concentration of Navy ranges in the eastern Pacific Region. Naval forces utilize each of the range areas—depending on the training to be accomplished, and the training resources of a given range. SSTC is a critical asset within this network of training ranges, particularly in amphibious, special warfare, and mine countermeasure training.

**Proximity to Military Families.** The region of San Diego is home to thousands of military families. Per NAVADMIN 300/06 (October 27, 2006), the Navy is required to limit "personnel tempo" (i.e., the amount of time sailors spend away from home). Personnel tempo is an important factor in morale and retention. The proximity of SSTC to NAB Coronado allows the Navy to limit the amount of time sailors spend away from home.

**Training Environment and Terrain.** The temperate, sub-tropical climate—and the attendant dry summers of southern California—allow for year-round training for Fleet readiness. The location of SSTC, with access to the oceanside's rough waters and the bayside's calm waters, allows personnel to start training in a calmer environment, and then quickly transition to more challenging situations as their skills and fitness levels improve. No other training area near San Diego has the capability to train in both calm bayside water and oceanside rough water. Further, SSTC's long stretches of open and accessible beach areas, established ocean anchorages, and the varied and vegetated inland terrain of SSTC-S, make the area ideal for amphibious, special warfare, and mine countermeasure training.

### **ES 1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION**

The purpose of the Proposed Action is to improve the availability and quality of training opportunities at SSTC—to achieve required levels of operational readiness. In order to meet training requirements, the

Navy proposes to continue current training activities, increase training tempo and types of training, conduct existing routine training at additional locations within SSTC's established training areas, and increase access to and availability of existing beach and inland training areas. A detailed description of the Proposed Action is provided in Chapter 2.

The Proposed Action is needed to provide a training environment consisting of training areas and range facilities with the capacity and capabilities to fully support required training tasks for operational units and military training units / schoolhouses and meet the operational readiness requirements of Title 10 of the United States Code (USC) 5062. The Navy has three primary needs that must be fulfilled to meet these requirements:

- Continue current training and increase the number of existing training activities and introduce new training activities and platforms in support of Fleet Readiness Training Plan (FRTP) and surge requirements;
- Provide assured year-round access and unencumbered use of training areas to meet current and future training needs per the Navy Tactical Task List;
- Provide a training range and training facilities that afford operational commands the flexibility to achieve diverse and realistic training at SSTC.

Each of these three needs is discussed in detail below. The Proposed Action would result in selectively focused, but critical enhancements and increases in training that are necessary if the Navy and Marine Corps are to maintain a state of military readiness commensurate with the national defense mission.

### **ES 1.3.1 Need for Increased and Improved Training at SSTC**

The Navy and Marine Corps are continuously adapting to meet changing military readiness requirements. Changes within the Navy and Marine Corps are transforming and increasing the training requirements on SSTC:

- The Navy's approach to pre-deployment training (the FRTP), that requires a unit be ready to deploy much earlier in the pre-deployment training cycle (i.e., the ability to surge-deploy). These training cycles require operational commands to increase their training tempos.
- U.S. Special Operations Command's force expansion and restructuring per the December 2002 Office of the Secretary of Defense Program Decision Memorandum, which includes the increase of Naval Special Warfare personnel operating on NAB Coronado, equivalent to one additional Sea, Air, and Land team.
- The Navy's Total Force Strategy, under which Explosive Ordnance Disposal groups have initiated a forcewide realignment, which emphasizes right-place, right-time training and has necessitated expanded use of Southwest Region training venues, including SSTC.
- The Congressionally-authorized increase in Marine Corps personnel to 202,000 active-duty personnel per the 2008 National Defense Authorization Act (Public Law 110 – 181 [H.R. 4986]) will in turn increase the number of Marine Corps personnel cycling through training programs at SSTC.
- Introduction of new platforms, training equipment, and service life extension programs for existing equipment require Navy personnel to begin new training on the new/upgraded equipment, while continuing to train on existing equipment.

These changes reflect increasing and additional requirements for capabilities by overseas operational commanders like U.S. Central Command in Iraq and Afghanistan, and a need to accommodate increases in the number of personnel based in the southern California region. They will require an increase in training types and tempos at SSTC and NASNI and the incorporation of new platforms (e.g., aircraft and equipment) into training at SSTC. They also will require better use of existing training areas within SSTC, but not an expansion of SSTC.

### **ES 1.3.2 Need for Year-round Access to Training Areas**

In 1983, the Navy initiated consultations under the Endangered Species Act (ESA) because of the Navy's proposed action to construct facilities in support of the Light Airborne Multipurpose System MK III. In preparation for the consultation, the Navy concluded that the proposed action might affect about 68 California least tern nests. California least tern is a federally-listed endangered bird under the ESA, and its displacement triggered a Section 7 consultation under ESA with the U.S. Fish and Wildlife Service (USFWS). One of the results of the consultation was that 75 acres of Navy training beach at Delta North and South (Figure ES-1) were fenced and set aside as California least tern nesting areas. In 1984, the Delta beaches were formally designated as a least tern preserve and are not part of the areas utilized under the Proposed Action.

Since then, the California least tern population has increased on SSTC, now reaching over 1,400 nests, with the majority of those nests occurring on the Delta Beaches. In addition, the California least tern has expanded its nesting range outside of Delta North and South, into and throughout SSTC-N's oceanside beach training lanes (Lanes 1 through 10). Throughout this period, the Navy has engaged in recurring ESA Section 7 consultations with the USFWS, with attention to ongoing military training on these lanes, and has implemented varying strategies to adapt to the growing California least tern nesting population and evolving Navy training needs at SSTC. These recurring consultations were conducted in parallel with the development of this EIS.

Under biological opinion FWS-SDG-3452.3 (March 10, 2005) and associated extensions, the Navy sets aside three beach training lanes (Lanes 8, 9, and 10) for California least tern nesting from April through September each year, in addition to expanded Delta North and South areas. The Navy restricts its training on these three training beaches for approximately 6 months out of the year.

In anticipation of potential increased training at SSTC, the Navy has modeled future training projections to assess its near-future needs for the SSTC-N beach training areas. Results showed that the remaining seven SSTC-N oceanside beach lanes (Lanes 1 through 7) will be insufficient to support future training tempo requirements. As such, the Navy needs additional year-round training space to support future deployment schedules and personal tempo requirements.

### **ES 1.3.3 Need for Flexibility and Realistic Training**

Military commands use SSTC to accomplish a wide variety of training. They value SSTC for its many different attributes, including unique site improvements as well as the attributes discussed in Section 1.2.2. Each of these military commands has to be able to quickly adapt their training on SSTC to address ever-changing Navy requirements for combat readiness overseas. The commands need a range that realistically simulates environments that operators will encounter overseas, as well as a range that allows them the freedom to quickly alter their training to meet operational needs overseas.

SSTC is located in a populated coastal area; its use for realistic military training can be constrained by adjacent residential, commercial, recreational, cultural, and sensitive natural resource uses. Operational constraints on training areas at SSTC make it challenging for Navy commands to support emerging and expected future training requirements. A training range that realistically simulates environments that

operators will encounter overseas, and prevents encumbrances that adversely affect training, is an ongoing need of commands that train at SSTC.

## **ES 1.4 THE ENVIRONMENTAL REVIEW PROCESS**

NEPA requires federal agencies to examine the environmental effects of their Proposed Actions. This EIS is a detailed public document that provides an assessment of the potential environmental impacts associated with a proposed major federal action. The impacts to be analyzed are those that occur to the human environment, including natural and physical resources. The Navy is the lead agency for this EIS. NMFS is a cooperating agency, pursuant to 40 CFR Section 1501.6. NMFS has jurisdiction by law and special expertise on environmental issues that are being addressed in this EIS.

### **ES 1.4.1 NEPA Public Participation**

The first step in the NEPA process is the publication of the Notice of Intent (NOI) by the action proponent, after the decision is made to prepare an EIS. The NOI provides an overview of the proposed action and invites the public to participate in identifying the significant issues deserving of study (i.e., participate in scoping). The Navy initiated the process for determining the scope of issues by publishing a NOI to prepare an EIS in the *Federal Register* (66 FR 41009) on August 6, 2001. Copies of the NOI and the Agency Scoping Package were mailed to local, state, and federal elected officials; regulatory agencies; local municipal jurisdictions; public service providers; and other parties known or expected to be interested in the Proposed Action. A copy of the NOI is provided in Appendix A.

Scoping is an early and open process for developing the scope of issues to be addressed in the EIS and for identifying issues related to a Proposed Action. During scoping, the public helps define and prioritize issues; the public conveys these issues to the Navy through written comments. As part of the EIS scoping process, the Navy held meetings on August 28, 2001 in Coronado, CA and August 29, 2001 in Imperial Beach; the meetings were designed to inform the public of the Proposed Action and to solicit the public's participation and comments. The meetings were advertised and the NOI was published in the *San Diego Union-Tribune* from August 6-8, 2001, in the *Coronado Eagle* on August 8, 2001, and in the *Imperial Beach Times* on August 9, 2001. At each meeting, Navy representatives provided an overview of the Proposed Action and alternatives, the NEPA process, training exercises at SSTC, and potential environmental issues on SSTC. Comment sheets were distributed for the public to submit their concerns and comments. Also, a court reporter was available at each meeting to record oral comments.

Independent of the public scoping meetings, the Navy conducted additional focused interviews. These interviews occurred during the 45-day comment period (and the additional 30 day extension of the comment period) and were designed to gather input from local city officials, regulatory agencies, and environmental organizations.

Participants in the scoping process identified several areas of interest and concern, as well as ideas for alternatives to the Proposed Action, which are addressed throughout this EIS. The scoping process resulted in commentary on a variety of topics; the majority of comments received were related to the description of alternatives, other training alternatives, snowy plovers and least terns, marine resources, threatened and endangered species, and effects on environmental health, safety, and recreation.

The Notice of Availability of the Draft EIS and Notice of Public Hearings were published in the Federal Register on January 22, 2010 (75 FR 1768) and notices were placed in the *San Diego Union-Tribune*, *Coronado Eagle*, and in the *Imperial Beach Times* announcing the availability of the EIS. The Navy held two public hearings, February 23 in Imperial Beach, CA, and February 24, 2010, in Coronado, CA. After receiving initial comments during the 45-day comment period, the Navy extended the response period by 30 days to allow the public additional time to review and comment on the Draft EIS. The Draft EIS was

distributed to those individuals, agencies, and associations who asked to be notified during the public scoping period, as well as to members of Congress, the Governor of California, and officials in the coastal region surrounding the SSTC Study Area. Additionally, the EIS was made available for general review at two information repositories in the local area, and on the project website ([www.silverstrandtrainingcomplexeis.com](http://www.silverstrandtrainingcomplexeis.com)). A total of 108 individuals and 22 agencies and organizations submitted comments on the Draft EIS.

This final EIS responds to public comments received on the EIS. Responses to public comments may take various forms as necessary, including correction of data, clarifications of and modifications to analytical approaches, and inclusion of additional data or analyses.

The Notice of Availability of the Final EIS was published in the Federal Register and notices were placed in the *San Diego Union-Tribune*, *Coronado Eagle*, and in the *Imperial Beach Times* announcing the availability of the Final EIS. The Notice of Availability of the Final EIS was published in the Federal Register by the EPA. Notification of the availability of the Final EIS was sent to interested individuals, agencies, and associations, as well as elected and other public officials. The Final EIS was distributed to those individuals, agencies, and associations who asked to be notified during the public comment period and at public hearings, as well as members of Congress, the Governor of California, and officials in the coastal region surrounding the SSTC Study Area. Additionally, the SSTC EIS was made available at two information repositories in the local area as well as on the project website ([www.silverstrandtrainingcomplexeis.com](http://www.silverstrandtrainingcomplexeis.com)).

Finally, a Record of Decision (ROD) will be signed by the Assistant Secretary of the Navy (Energy, Installations & Environment) and be issued, no sooner than 30 days after this Final EIS is made available to the public. The ROD summarizes the Navy's decision and identifies the selected alternative, describes the public involvement and agency decision-making processes, and presents commitments to specific mitigation measures.

## **ES 1.5 OTHER ENVIRONMENTAL REQUIREMENTS CONSIDERED**

The Navy must comply with a variety of other federal environmental laws, regulations, and Executive Orders (EOs). These include (among other applicable laws and regulations) the following:

- Clean Air Act
- Coastal Zone Management Act
- Endangered Species Act
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- EO 13045, Environmental Health and Safety Risks to Children
- Resource Conservation and Recovery Act
- Federal Water Pollution Control Act (Clean Water Act)
- Magnuson-Stevens Fishery Conservation and Management Act
- Marine Mammal Protection Act
- Migratory Bird Treaty Act
- National Historic Preservation Act
- Rivers and Harbors Act

The Navy has consulted with regulatory agencies as appropriate during the NEPA process and prior to implementation of the Proposed Action to ensure requirements are met. A full description is provided in Chapter 6 and Appendix G provides a list of the Silver Strand Training Complex (SSTC) regulatory

agency consultation documentation. Agency correspondence and supporting documentation can be found on the SSTC EIS website at [www.silverstrandtrainingcomplexeis.com](http://www.silverstrandtrainingcomplexeis.com).

In addition, laws and regulations of the State of California appropriate to Navy actions are identified and addressed in the EIS. The EIS will facilitate compliance with applicable, appropriate state laws and regulations.

## **ES 1.6 PROPOSED ACTION AND ALTERNATIVES**

As presented in Chapter 1, the Navy proposes to implement actions within the SSTC. There are five main components of the Proposed Action:

- Continuation of current training and T&E activities conducted within the study area;
- Increase in training tempo from baseline conditions and additions to types of training;
- Carrying out of existing, routine training at additional locations within SSTC established training areas;
- Introduction of new platforms and equipment;
- Increased access and availability to existing beach and inland training areas.

Through implementation of the components listed above, the Proposed Action would support mission-oriented requirements for SSTC through an increase in diverse and realistic training and improved accessibility to training areas.

### **ES 1.6.1 Alternatives Development**

NEPA implementing regulations provide guidance on the consideration of alternatives in an EIS. The Navy is required to rigorously explore and objectively evaluate all reasonable project alternatives; further, the Navy is required to briefly discuss the reasons for not evaluating those alternatives that were eliminated from further consideration and detailed study (40 Code of Federal Regulations [CFR] 1502.14).

Alternatives must also include a No Action Alternative. The No Action Alternative ensures that agencies compare the potential impacts of a proposed major federal action to the known impacts of maintaining the status quo. The potential impacts of the No Action Alternative are compared to the potential impacts from activities proposed under Alternative 1 and Alternative 2.

### **ES 1.6.2 Criteria for Developing Alternatives**

The alternatives were developed by the Navy after careful assessment by subject-matter experts, including units and commands that utilize SSTC, Navy environmental managers and scientists, and the consideration of comments received during scoping. The Navy has developed a set of criteria for use in assessing whether a possible alternative meets the purpose of and need for the Proposed Action (refer to Section 1.5):

- Must meet the requirements of individual and unit-level training (including schoolhouse training)<sup>1</sup>;

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<sup>1</sup> Schoolhouse training is typically conducted in formal courses with syllabi and instructors including both classroom and field work.

- Must have sufficient available and suitable training space to simultaneously accommodate the training needs of all of the operational users described in Section 1.4.3 so that they can achieve training tempo requirements based on Fleet deployment schedules;
- Must meet future training requirements with year-round, assured access to San Diego Bay, ocean, beach, and inland training areas;
- Must provide a realistic training environment that simulates real world littoral combat conditions and is free of man-made restrictions/objects that interfere with preparing servicemen for operations in real-world conditions;
- Must complete the full range of required training elements at SSTC; and
- Must provide co-location of commands, equipment, facilities, and infrastructure that support existing and future training to meet training and personnel tempo requirements.

Three alternatives are analyzed in the EIS: (1) The No Action Alternative, (2) Alternative 1, and (3) Alternative 2. The No Action Alternative would continue baseline training activities. The Navy would also continue to operate under existing access restrictions. Alternative 1 increases training tempo from baseline conditions, introduces new platforms and equipment into training, and decreases access restrictions and encumbrances on training areas. Alternative 2 is identical to Alternative 1 except that the Navy would utilize all ocean beaches along SSTC-N and SSTC-S, and all bayside training beaches, except the Delta North and South nesting habitat, for continuous, year-round training. Further detail regarding the alternatives considered in the EIS follows.

### **ES 1.6.3 Alternatives Eliminated from Further Consideration**

Having identified criteria for generating alternatives for consideration in the EIS, the Navy eliminated several alternatives from further consideration after initial review to satisfy 40 CFR Section 1502.14(a). Specifically, the following potential alternatives were not carried forward for analysis:

- Alternate Training Complex Locations
- Training Relocation to SSTC-S
- Training Reductions
- Simulated Training
- Construction and Use of Demolition Pit at SSTC-S
- Allow Unrestricted Usage of Training Lanes 8, 9, and 10 if California Least Tern Nesting Threshold is Reached
- Creating More Than or Less Than 22 Concurrent Buffered and Marked Avoidance Areas for Western Snowy Plover

Rationales for eliminating these alternatives are provided in Chapter 2.

### **ES 1.7 NO ACTION ALTERNATIVE: BASELINE TRAINING AND ACCESS RESTRICTIONS**

The Navy has been using SSTC for over 60 years. Under the No Action Alternative, training activities would continue at baseline levels. SSTC would not accommodate an increase in training tempo or type required to execute the FRTP or introduce platforms or equipment. Under the No Action Alternative Navy would not accommodate training requirements for repositioned forces in the Southern California area. In addition, under the No Action Alternative, training access restrictions, including no training in vernal pools as well as seasonal restrictions on Blue 2, Orange 1, and Orange 2 would remain unchanged. Evaluation of the No Action Alternative in the EIS provides a baseline for assessing environmental

impacts of Alternative 1 (Preferred Alternative) and Alternative 2, as described in the following subsections.

Each military training activity described in Chapter 2 of the EIS meets a requirement that can be ultimately traced to requirements from the National Command Authority (the President and the Secretary of Defense or their duly deputized alternates or successors). Over the years, the tempo and types of training have fluctuated at SSTC due to changing requirements brought about by the dynamic nature of international events, advances in warfighting doctrine and procedures, and force structure changes. Such developments have influenced the frequency, duration, intensity, and location of required training. The factors influencing tempo and types of training are fluid in nature, and will continue to cause fluctuations in training activities at SSTC. Accordingly, training data used throughout the EIS are a representative baseline for evaluating impacts that may result from the proposed training activities under the No Action Alternative.

With reference to the selection criteria identified in Section ES 1.6.2, the No Action Alternative satisfies current Fleet training requirements; however, because the No Action Alternative does not propose increases in training tempo it does not accommodate training associated with the changes discussed in Section ES 1.3.1. It also does not introduce new platforms and equipment into the Fleet. Nevertheless, the No Action Alternative provides a valuable baseline against which to assess Alternative 1 and Alternative 2.

### **ES 1.8 ALTERNATIVE 1: INCREASE TRAINING AND ACCESS TO SSTC TRAINING AREAS (PREFERRED ALTERNATIVE)**

Alternative 1, the Navy's preferred alternative, is designed to meet Navy and Department of Defense (DoD) current and near-term operational training requirements. It meets the selection criteria listed in Section 2.1.2. Under Alternative 1, the Navy would increase the tempo of training, introduce new platforms and systems into training, conduct existing routine training at additional locations within SSTC training areas, introduce new platforms and equipment, and increase access and availability to SSTC training areas. The tempo of training would be increased to meet 100 percent of Navy NTA requirements. This represents an increase from the baseline tempo of 3,926 activities annually to approximately 5,343 activities annually. New platforms and equipment would include replacement of Amphibious Assault Vehicles with Expeditionary Fighting Vehicles, an updated Offshore Petroleum Discharge System, and the MH-60S Seahawk Multi-Mission helicopter.

Access and availability to SSTC training areas would be increased through opening of beach lanes Blue 2, Orange 1 and/or Orange 2 for training during the nesting season if one of the following two criteria are met: (1) Beach lanes Red 1 and 2, Green 1 and 2, and Blue 1 are being utilized and the additional training lane(s) are needed, (2) Attributes of those lane(s) make them more suitable for meeting training needs than other available training lanes. Examples of lane attributes which may allow usage of Blue 2, Orange 1 and/or Orange 2 include but would not necessarily be limited to: nearshore in-water conditions such as the presence of sand bars or holes, beach conditions such as slope and depth of the beach, distance from other training activities occurring on SSTC-N oceanside beach and boat lanes, and a need for diversity in training locations. The Navy would also mark and buffer no more than 22 concurrent western snowy plover nests for avoidance on SSTC-N and SSTC-S oceanside beaches plus any additional nests that exceed 22 that are initiated in beach lanes Orange 1 and Orange 2. The Navy would also allow limited training involving foot traffic, but not vehicle traffic, in the vernal pools when vernal pool conditions are determined to be dry.

## ES 1.9 ALTERNATIVE 2: INCREASE TRAINING AND FURTHER ENHANCE ACCESS TO SSTC TRAINING AREAS

Alternative 2 meets Navy and DoD current and near-term operational training requirements, and further enhances training capabilities at SSTC. Under Alternative 2, proposed training tempo and types of training, training location and introduction of platforms and equipment into training, would be the same as described under Alternative 1. The Navy would increase the tempo of training to meet 100 percent of Navy NTA requirements. As described under Alternative 1, this would represent an increase from the baseline tempo of 3,926 activities to approximately 5,543 activities annually. The only differences between Alternative 1 and Alternative 2 are additional access and availability of SSTC-N training lanes. Under Alternative 2, the Navy would fully utilize all 7,000 yards of ocean beaches along SSTC-N and SSTC-S, and all bayside training beaches, except the Delta North and South nesting habitat (i.e., Alpha, Bravo, Charlie, Echo, Foxtrot, Golf, and Hotel) for continuous, year-round training. The Navy would continue to conduct existing management practice on the SSTC training beaches including nest relocation, predator management and control, habitat modification, site preparation for maintenance, nest substrate enhancement, signage and education, recreational use restrictions, and rearing of collected eggs, injured and sick individuals.

## ES 1.10 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The EIS describes existing environmental conditions and assesses the environmental effects of the Proposed Action and alternatives. The affected environment and environmental consequences are described and analyzed according to categories of resources. The categories of resources addressed, and their respective section numbers, in the EIS are listed within Table ES-1.

In the environmental impact analysis process, the resources analyzed are identified and the expected geographic scope of potential impacts for each resource, known as the resource's region of influence, is defined. The discussion and analysis, organized by resource area, covers the ocean lanes of the SSTC, the beach areas of SSTC-N and SSTC-S, the bayside training areas, the inland areas of SSTC-S, and the southern beaches and nearshore waters of NASNI to the extent affected resources or potential impacts are present.

**Table ES-1: Categories of Resources Addressed in the EIS**

Land Use (3.1)	Marine Mammals (3.9)
Geology and Soils (3.2)	Sea Turtles (3.10)
Air Quality (3.3)	Terrestrial Biological Resources (3.11)
Hazardous Materials and Waste (3.4)	Birds (3.12)
Water Resources (3.5)	Cultural Resources (3.13)
Acoustic Environment (Terrestrial) (3.6)	Transportation and Circulation (3.14)
Marine Biological Resources (3.7)	Socioeconomics, Environmental Justice, and Protection of Children (3.15)
Fish (3.8)	Public Health and Safety (3.16)

The Navy has a comprehensive management program that considers biological resources, cultural resources, environmental compliance, and environmental resource education and interpretation. The basis for Navy environmental resource management at SSTC is a holistic, long-term view of human activities in conjunction with air/water quality, cultural resources, land uses, noise ordinances, waste management,

or other marine or terrestrial biological resources such as, sensitive habitats and federally listed species under the Endangered Species Act (ESA). The Navy is responsible for compliance with applicable federal environmental laws, rules, regulations, policies, and guidelines designed to protect marine and terrestrial environmental and cultural resources at SSTC, concurrent with the Navy's sustained utilization of SSTC for training. Environmental programs at SSTC balance the need for environmental protection with the training mission, such that naval forces maximize the benefits of SSTC training assets while minimizing adverse effects on the environment.

To achieve this balance, the Navy monitors the effects of training activities on environmental resources, using an adaptive management strategy to modify resource management in response to the ongoing influx and evaluation of monitoring data. Through this approach, the Navy's environmental resource managers acquire information to identify potential impacts in a timely manner, thus allowing for ongoing adjustments to training and/or resource management while keeping the training mission on schedule to meet necessary training goals. The monitoring effort is focused not only on the environmental resource, such as a protected species, but also on the operational and administrative setting for training activities potentially affecting the resource.

### **ES 1.11 SUMMARY OF EFFECTS**

Environmental effects which may result from the implementation of the Navy's Proposed Action or alternatives is summarized in Table ES-2. A summary of effects is presented for each of the resource categories previously listed in Table ES-1.

### **ES 1.12 CUMULATIVE IMPACTS**

Cumulative impacts were analyzed by following NEPA of 1969, Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Identifiable effects of actions occurring in the past and present were analyzed along with reasonably foreseeable future actions to assess additive impacts of the Proposed Action. Past, present, and planned projects were considered, as well as other activities occurring in the region, including marine traffic, activities contributing to water pollution, and air quality emissions. Cumulative effects were identified for the resource areas and determined to be minimal for land use, air quality, marine biological resources, fish, sea turtles, marine mammals, terrestrial biological resources, birds, cultural resources, transportation and circulation, socioeconomics, and public health and safety. Cumulative effects to geology and soils would be negligible relative to the scale of natural processes operating in the region of influence. Generation of hazardous materials and wastes would be managed as part of the overall hazardous waste stream and existing physical capacities would be sufficient to handle cumulative additions to the existing waste stream. Compliance with state and federal regulations would limit the release of pollutants to *de minimis* amounts, which would not result in substantial cumulative effects to water resources. At SSTC-S, training would also increase the number of intrusive noise events; acoustic effects would result even in the absence of other cumulative projects.

### **ES 1.13 MITIGATION MEASURES**

NEPA regulations require that the federal agency study means to mitigate adverse environmental impacts of the Proposed Action or alternatives (40 CFR Part 1502.16). Additionally, an EIS is to include study of appropriate mitigation measures not already included in the Proposed Action or alternatives (40 CFR Part 1502.14[f]). Each of the alternatives, including the Proposed Action considered in the EIS, includes mitigation measures intended to reduce the environmental effects of Navy activities. Mitigation measures are discussed throughout the EIS in connection with affected resources, and are also addressed in Chapter 5, Mitigation.

SSTC is located in a populated coastal area, and its use for realistic military training is constrained by adjacent residential, commercial, recreational, cultural, and sensitive natural resource uses. As part of the Navy's commitment to sustainable use of resources and environmental stewardship, the Navy incorporates measures that are protective of the environment into all of its activities. These include employment of best management practices, standard operating procedures, adoption of conservation recommendations, and other measures that mitigate the impacts of Navy activities on the environment. Some of these measures are generally applicable and others are designed to apply to certain geographic areas during certain times of year and for specific types of Navy training. Mitigation measures covering habitats and species occurring in the SSTC have been developed through various environmental analyses conducted by the Navy for land and sea ranges and adjacent coastal waters. These mitigation measures are issued to units and commands participating in an exercise.

Table ES-2: Summary of Effects

Resource	No Action Alternative	Alternative 1	Alternative 2
3.1 Land Use	<ul style="list-style-type: none"> <li>• Current Navy activities include long-established military land uses, and the Navy allows the public access to the public beaches adjacent to active training areas. Therefore, public would have ample access to the beach.</li> </ul>	<ul style="list-style-type: none"> <li>• Alternative 1 would include activities that are consistent with long-established military land uses and the Navy allows the public access to public beaches adjacent to active training areas. Use of training areas would increase under Alternative 1.</li> </ul>	<ul style="list-style-type: none"> <li>• The effects of Alternative 2 on land use would be similar to the effects described under Alternative 1. The Navy allows the public access to public beaches adjacent to active training areas.</li> </ul>
	<p><b>Mitigation:</b> There are mitigation measures in place for other resources (e.g., Acoustic Environment [Section 3.6], Biological Resources [Sections 3.7-3.12], Public Health and Safety [Section 3.16]) that also apply to land use on SSTC, mainly through the stipulation of training parameters.</p>		
3.2 Geology and Soils	<ul style="list-style-type: none"> <li>• Only previously disturbed land areas are affected. Soil disturbances are minor and affect only portions of the area.</li> <li>• Sandy beaches are disturbed; however, the impacts are temporary.</li> <li>• Ocean bottom sediments are disturbed by underwater detonations, but the areas affected are small.</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed training activities would be comparable in type to existing activities, but the level of activity of some activities would increase. The level of disturbance of beach and inland surfaces would incrementally increase the potential for soil erosion, but would still be minor and affect only portions of the area.</li> <li>• Underwater detonations would affect a larger area of bottom sediments than under the No Action Alternative, but the area affected would be small.</li> </ul>	<ul style="list-style-type: none"> <li>• With regard to soils and sediments, the effects of this alternative would be similar to those described for Alternative 1. Overall, the effects of Alternative 2 would be more widely dispersed and training areas formerly avoided would experience a slightly increased level of use over Alternative 1.</li> </ul>
	<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• Currently, sand (of a quality that is appropriate for nesting California least terns) is periodically replenished on Delta beaches when available, vegetation on the back dunes of SSTC beaches is maintained to reduce water and wind erosion, and in inland SSTC-S areas, vehicles are restricted to existing roads to minimize the loss of vegetation.</li> <li>• Currently, disturbed areas of beach are restored as needed with bulldozers.</li> <li>• The NBC Integrated Natural Resources Management Plan (INRMP) includes strategies to minimize erosion on SSTC and the Navy works to implement these strategies.</li> </ul>		

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
3.3 Air Quality	<ul style="list-style-type: none"> <li>No increases in emissions above baseline.</li> </ul>	<ul style="list-style-type: none"> <li>Emission increases would be less than the <i>de minimis</i> thresholds under the General Conformity Rule. No conformity determination is required.</li> </ul>	<ul style="list-style-type: none"> <li>Emission increases would be less than the <i>de minimis</i> thresholds under the General Conformity Rule. No conformity determination is required.</li> </ul>
	<p><b>Mitigation:</b> The Navy currently has a comprehensive air quality management program. Mitigation measures that are part of the Navy's air quality management practices are implemented at SSTC. Areas that are used for training exercises are typically vegetated, which reduces fugitive dust emissions associated with ground disturbance. Aircraft, marine vessels, ground vehicles, and Tactical Support Equipment are required to be maintained and meet applicable emission standards (such as smog certification for on-road vehicles) in accordance with state requirements.</p>		
3.4 Hazardous Materials and Wastes	<ul style="list-style-type: none"> <li>Use of expendable training materials deposits small amounts of nonhazardous inorganic materials on the land ranges which are collected where feasible at the conclusion of training. Only trace amounts of nonhazardous organic compounds are left following a detonation of explosives and are not expected to affect surrounding biological or physical resources.</li> <li>The Navy's existing hazardous materials management system is sufficient for handling hazardous materials needed for the baseline training activities.</li> <li>The Navy's existing hazardous waste system is sufficient for handling hazardous wastes generated by baseline training activities.</li> </ul>	<ul style="list-style-type: none"> <li>Under this alternative, the amounts of expended training materials would increase. The weight of expended flare and smoke canister residues would increase and the amounts of residues from detonations of underwater explosives would increase. Despite these increases, the amounts of expended materials would not have an adverse effect on physical or biological aquatic resources.</li> <li>The Navy's existing hazardous materials management system is sufficient for handling hazardous materials needed for the proposed training activities.</li> <li>The Navy's existing hazardous waste management system is sufficient for handling of wastes generated by the Proposed Action.</li> </ul>	<ul style="list-style-type: none"> <li>Impacts would be similar to those for Alternative 1.</li> </ul>
	<p><b>Mitigation:</b> The Navy's general instructions (e.g., Chief of Naval Operations Instruction [OPNAVINST] 5090.1) and training activity planning and review processes serve to ensure that hazardous materials and hazardous wastes are stored and handled appropriately. The Navy's current mitigation measures include its business plan, Hazardous Waste Management Plan (HWMP), <i>NBC Hazardous Substance Release Integrated Contingency Plan</i> (DoN 2008), and <i>Regional Explosive HWMP</i>. Navy personnel also collect expended training materials at the conclusion of a training activity to the extent practicable.</p>		

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
3.5 Water Resources	<ul style="list-style-type: none"> <li>• No effects on surface water or groundwater hydrology (Silver Strand peninsula has no potable surface or groundwaters, so SSTC training activities do not affect freshwater water quality)</li> <li>• Consistent with <i>Basin Plan</i> and NRWQC</li> <li>• Releases of munitions constituents and other expended materials during training activities have no measurable effects on water quality</li> <li>• No long-term degradation of marine, surface, or groundwater quality</li> <li>• Consistent with public uses of state or federal waters</li> </ul>	<ul style="list-style-type: none"> <li>• No effects on surface water or groundwater hydrology (Silver Strand peninsula has no potable surface or groundwaters, so SSTC training activities do not affect freshwater water quality)</li> <li>• Consistent with <i>Basin Plan</i> and NRWQC</li> <li>• Increased releases of munitions constituents and other expended materials during training activities would not measurably affect water quality</li> <li>• No long-term degradation of marine, surface, or groundwater quality</li> <li>• Increased use of water areas for training would be consistent with public uses of state or federal waters</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle, boat, and helicopter use and amphibious landings would increase similar to Alternative 1. Effects are the same as described for Alternative 1.</li> </ul>
<p><b>Mitigation:</b> The Navy's current practices affecting water quality, primarily hazardous materials handling and waste disposal practices, are based on requirements in OPNAVINST 5090.1. Those requirements, in turn, were developed primarily to comply with federal environmental regulations. Efforts to preserve vegetation on the backsides of dunes along the shoreline may reduce erosion and thus reduce transport of sediments into adjacent surface waters. Collection of spent training materials at the conclusion of training activities also may incrementally reduce the amounts of contaminants transported into adjacent waters.</p> <p>With respect to water use, the Navy mitigates potential effects by avoiding washing causeway pier sections in the ocean and by pumping seawater through its Offshore Petroleum Discharge System during training instead of using petroleum products. OPNAVINST also includes guidance on shipboard operations afloat.</p>			

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.6 Acoustic Environment</b></p>	<ul style="list-style-type: none"> <li>Existing ambient sound levels include sounds from various sources. Training at SSTC-S occasionally creates intrusive sound for short periods, especially during Amphibious Raid and breacher training. Training at SSTC-N occasionally creates intrusive sound for short periods, especially during Elevated Causeway (ELCAS) installation training. Helicopter overflights and ship pass-bys of populated land areas would be audible for a few minutes per day in any one area, without contributing substantially to the long-term average sound level. Small arms (blanks) firing occasionally is audible for short periods in portions of the community. Routine on-site and off-site training-related activities, such as the operation of powered vehicles and equipment, add incrementally to the ambient background sound level, especially during weekdays. Taken together, these sound sources affect the acoustic environment of Silver Strand peninsula.</li> </ul>	<ul style="list-style-type: none"> <li>Sound levels generated by training would remain the same as the No Action Alternative, but training events producing sound would increase in frequency. Alternative 1 would increase the frequency of aircraft and amphibious vehicle training, ELCAS pile driving, shotgun breacher activities, and use of blanks on the beach.</li> </ul>	<ul style="list-style-type: none"> <li>The effects of Alternative 2 on the acoustical environment would be substantially the same as the effects described under Alternative 1.</li> </ul>
<p><b>Mitigation:</b> Activity planning often considers location (e.g., Breacher training activities are located in inland areas) and time of day. The Navy notifies local emergency personnel prior to exercises that include pyrotechnics or blanks. Call-outs during physical conditioning training are minimized at night and when in residential areas.</p>			

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.7 Marine Biological Resources</b></p>	<ul style="list-style-type: none"> <li>• On the beach, vehicle use, boat landings, helicopter landings, and foot traffic associated with a range of activities could cause temporary localized disturbances of infaunal invertebrates of the sand.</li> <li>• Minimal disturbance of sandy bottom habitat and increased turbidity from amphibious landings and underwater demolitions.</li> <li>• A total of 1.13 acres of eelgrass habitat may be impacted in the designated training lane within the Bravo training area.</li> <li>• With the current protective measures, no adverse effect to EFH and their associated managed species are anticipated during amphibious landing and beach construction activities within the Bravo training area.</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle, boat, and helicopter use and amphibious landings would increase; however, effects are the same as described for the No Action Alternative. Amphibious activities conducted on the bayside would be limited to the same designated training lane within the Bravo training area.</li> <li>• With the current and proposed protective measures, no adverse effect to EFH and their associated managed species are anticipated during amphibious landing and beach construction activities within the Bravo training area.</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle, boat, and helicopter use and amphibious landings would increase similar to Alternative 1. Effects are the same as described for the No Action Alternative.</li> <li>• With the current and proposed protective measures, no adverse effect to EFH and their associated managed species are anticipated during amphibious landing and beach construction activities within the Bravo training area.</li> </ul>
	<p><b>Mitigation:</b> Management practices are in place for jurisdictional waters and special aquatic sites. Additionally, the Navy has consulted with NMFS on EFH. Potential impacts of up to 1.13 acres of eelgrass habitat/EFH for larger boat landings, ELCAS, and causeway insertions in the designated training lane on Bravo Beach will be mitigated consistent with the Southern California Eelgrass Mitigation Policy. This mitigation will occur at an established Navy Eelgrass Mitigation Sites and be drawn as part of the Navy Eelgrass Mitigation Bank.</p> <p>As a result of consultation with the NMFS for EFH, the Navy will conduct a new bottom habitat mapping survey to more accurately detail potential habitat types (ex., sand, cobble, rocks) within the oceanside SSTC boat lanes. This effort, scheduled to begin in 2011, is designed to update bottom type classification at finer resolution and spatial scales than previous California State funded surveys from 2002. The goal from this Navy funded survey would be to provide information to NMFS on habitat types within SSTC, and to Navy commands conducting underwater detonations at SSTC for consideration in selection of appropriate bottom-laid detonation sites.</p>		

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.8 Fish</b></p>	<ul style="list-style-type: none"> <li>• Small numbers of fish would be killed by shock waves from underwater detonations associated with the SSTC. However, underwater detonations would occur primarily in low-use habitats.</li> <li>• Noise associated with marine vessels is unlikely to affect fish as source levels from these sources are below those known to cause injury. Noise associated with pile driving would have some lethal and sublethal effects to fish but impacts would be localized due to the nature of the activity.</li> <li>• Groundfish are unlikely to be affected by activities in shallow waters.</li> <li>• With the current protective measures, no adverse effect to EFH and their associated managed species are anticipated.</li> </ul>	<ul style="list-style-type: none"> <li>• Increases in pile driving and underwater detonation activities would increase the lethal and sublethal effect to fish species but fish assemblages would not be expected to be affected.</li> <li>• With the proposed protective measures, no adverse effect to EFH and their associated managed species are anticipated.</li> </ul>	<ul style="list-style-type: none"> <li>• Increases in pile driving and underwater detonation activities would increase the lethal and sublethal effect to fish species but fish assemblages would not be expected to be affected.</li> <li>• With the proposed protective measures, no adverse effect to EFH and their associated managed species are anticipated.</li> </ul>
	<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• Habitat mitigation for intertidal and subtidal areas, including eelgrass, provide a degree of mitigation for fish species documented to reside within those habitats.</li> <li>• The mitigation for 1.13 acres of lost eelgrass habitat would provide alternative habitat for fish species potentially lost or displaced from eelgrass by activities described in this section, thus mitigating effects to fish.</li> </ul>		

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.8 Fish (Continued)</b>	<ul style="list-style-type: none"> <li>• As a result of the EFH consultation with the NMFS, the Navy will conduct a new bottom habitat mapping survey to more accurately detail potential habitat types (ex., sand, cobble, rocks) within the oceanside SSTC boat lanes. Similar to the measures used to avoid sensitive habitats when selecting underwater explosive device detonation sites, the nearshore habitat survey data will also be used to ensure the OPDS system is not placed within any sensitive habitats.</li> <li>• The Navy will conduct April to May pre-event surveys for grunion prior to SSTC training events that could to disturb intertidal beach areas. From Table 2-1, events identified for grunion pre-event surveys include 41- Causeway Pier Insertion and Retraction training (max. of 10 per year), and 42-ELCAS (max. of four per year). These training events generally occur within only a few boat\beach lanes in SSTC-N and can occur throughout the year. For events that have a requirement to occur in April and May, the Navy will use predicted grunion spawning periods obtained from the California Department of Fish and Game (<a href="http://www.dfg.ca.gov/marine/grunionschedule.asp">http://www.dfg.ca.gov/marine/grunionschedule.asp</a> ) to anticipate times to survey 10-14 days prior to the next ELCAS or Causeway Pier Insertion and Retraction.</li> <li>• This survey will identify if grunion spawning occurred or did not occur on the beach area scheduled for training. If grunion spawning is documented, then a determination on the spatial extent of spawn across the planned training area and magnitude of spawning (on the standard grunion 0-5 spawning scale) will be made. For cases in which a significant spawning run is observed (4 or 5 on the spawning scale) coincidental with and at the same location as the beach-impacting training event, the Navy will attempt to delay the event or move to a training area of lower density spawning or an area of no spawning. If such a shift cannot be done due to schedule conflict over multiple SSTC boat and beach lanes, logistic requirements to use a specific lane or area within a lane that precludes a shift, or safety considerations (ex., weather conditions, sea state), then the Navy will inform NMFS Southwest Region that training was conducted on that site for the specified reason.</li> <li>• As a result of the NMFS IHA consultation, there will likely be annual SSTC-specific reporting requirements on the quantities (number of detonations) and types (charge weight) of individual explosive used. In addition, also as part of the IHA monitoring requirement, the Navy will be conducting representative mitigation monitoring for a sub-set of the total underwater detonations authorized by NMFS. This is approximately 4-16 individual detonation training events. During this monitoring, civilian marine biologists will independently observe the oceanside detonation site for marine mammals and sea turtles to ensure and document that the correct protective measures are applied. Under the EFH consultation, these biologists will also document the extent and quantity of any fish mortality (or lack of mortality). This information will be included in the Navy's annual monitoring report to NMFS.</li> </ul>		

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.9 Marine Mammals</b></p>	<ul style="list-style-type: none"> <li>• Modeling estimates for the No Action Alternative indicate that exposures are not expected to result in injury, severe injury, or mortality of marine mammals. Without implementation of current mitigation measures, underwater detonations and pile driving could result in behavioral and temporary threshold shift (TTS) (Level B) harassment exposures. 78 annual exposures to pressure from underwater detonations could result in TTS and 68 annual exposures could result in nonphysiological behavioral exposures (Level B harassments). In addition, 30 annual exposures (20 bottlenose dolphins, 10 harbor seals) from pile installation activities and 144 annual exposures (3 gray whales, 84 bottlenose dolphins, 51 California sea lions, and 6 harbor seals) pile removal activities could result in Level B harassment. No exposures are expected to result in injury, severe injury, or mortality.</li> <li>• Implementation of current mitigation measures minimizes potential impacts to marine mammal species in the SSTC ROI.</li> <li>• Ship collisions are unlikely due to the low density of marine mammals in the area.</li> </ul>	<ul style="list-style-type: none"> <li>• Modeling estimates for Alternative 1 indicate that without implementation of current mitigation measures, an increased tempo of underwater detonations and pile driving could result in an increase of behavioral and TTS (Level B) harassment. 153 annual exposures to pressure from underwater detonations could result in TTS and 114 annual exposures could result in nonphysiological behavioral exposures (Level B harassments). In addition, 60 annual exposures (40 bottlenose dolphins, 20 harbor seals) from pile installation activities and 288 annual exposures (6 gray whales, 168 bottlenose dolphins, 102 California sea lions, and 12 harbor seals) pile removal activities could result in Level B harassment. No exposures are expected to result in injury, severe injury, or mortality.</li> <li>• Implementation of current mitigation measures would minimize potential impacts to marine mammal species in the SSTC ROI.</li> <li>• Ship collisions are unlikely due to the low density of marine mammals in the area.</li> <li>• Effects from other activities are the same as described under the No Action Alternative.</li> </ul>	<ul style="list-style-type: none"> <li>• With implementation of current mitigation measures, effects are the same as described under Alternative 1.</li> </ul>

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.9 Marine Mammals (Continued)</b>	<p><b>Mitigation:</b></p> <p>For very shallow water (VSW) underwater detonations on SSTC oceanside (0-24 feet):</p> <ul style="list-style-type: none"> <li>• Easily visible anchored floats will be positioned on a 1,200 foot or 400 yard radius of a roughly semi-circular zone (the shoreward half being bounded by shoreline and immediate off-shore water) around the detonation location for small explosive exercises at the SSTC. These mark the outer limits of the mitigation zone.</li> <li>• For each VSW underwater detonation event, a safety-boat with a minimum of one observer is launched 30 or more minutes prior to detonation and moves through the area around the detonation site. The task of the safety observer is to exclude humans from coming into the area and to augment a shore observer's visual search of the mitigation zone for marine mammals. The safety-boat observer is in constant radio communication with the exercise coordinator and shore observer discussed below.</li> <li>• A shore-based observer will also be deployed for VSW detonations in addition to boat based observers. The shore observer will indicate that the area is clear of marine mammals after 10 or more minutes of continuous observation with no marine mammals having been seen in the mitigation zone (1,200 feet or 400 yards) or moving toward it.</li> <li>• At least 10 minutes prior to the planned initiation of the detonation event-sequence, the shore observer, on an elevated on-shore position, begins a continuous visual search with binoculars of the mitigation zone. At this time, the safety-boat observer informs the shore observer if any marine mammal has been seen in the zone and, together, both search the surface within and beyond the mitigation zone for marine mammals (and other protected species such as sea turtles).</li> <li>• The observers (boat and shore based) will indicate that the area is not clear any time a marine mammal is sighted in the mitigation zone or moving toward it and, subsequently, indicate that the area is clear of marine mammals when the animal is out and moving away and no other marine mammals have been sighted.</li> <li>• Initiation of the detonation sequence will only begin on final receipt of an indication from the shore observer that the area is clear of marine mammals and will be postponed on receipt of an indication from that any observer that the area is not clear of marine mammals.</li> <li>• Following the detonation, visual monitoring of the mitigation zone continues for 30 minutes for the appearance of any marine mammal in the zone. Any marine mammal appearing in the area will be observed for signs of possible injury.</li> <li>• Any marine mammal observed after a VSW underwater detonation either injured or exhibiting signs of distress will be reported to Navy environmental representatives from the regional Navy shore commander (Commander, Navy Region Southwest) and U.S. Pacific Fleet, Environmental Office, San Diego Detachment. The Navy will report these events to the Stranding Coordinator of NMFS' Southwest Regional Office using Marine Mammal Stranding communication trees and contact procedures established for the Southern California Range Complex. These voice or email reports will contain the date and time of the sighting, location (or if precise latitude and longitude is not currently available, then the approximate location in reference to an established SSTC beach feature), species description (if known), and indication of the animal's status.</li> </ul>		

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.9 Marine Mammals (Continued)</b>	<p>Mitigation measures for shallow water underwater detonations on SSTC oceanside (24-72 feet):</p> <ul style="list-style-type: none"> <li>• A mitigation zone of 1,500 feet or 500 yards will be established around each underwater detonation point. This mitigation zone is based on the maximum range to onset-TTS (either 23 psi or 182 dB)</li> <li>• A minimum of two boats, including but not limited to small zodiacs and 11-meter Rigid Hulled Inflatable Boats (RHIB) will be deployed. One boat will act as an observer platform, while the other boat is typically the diver support boat.</li> <li>• Two observers with binoculars on one small craft/boat will survey the detonation area and the mitigation zone for marine mammals from at least 30 minutes prior to commencement of the scheduled explosive event and until at least 30 minutes after detonation.</li> <li>• In addition to the dedicated observers, all divers and boat operators engaged in detonation events can potentially monitor the area immediately surrounding the point of detonation for marine mammals (and other protected species such as sea turtles).</li> <li>• If a marine mammal is sighted within the 1,500 foot or 500 yard mitigation zone or moving towards it, underwater detonation events will be suspended until the marine mammal has voluntarily left the area and the area is clear of marine mammals for at least 30 minutes.</li> <li>• Immediately following the detonation, visual monitoring for marine mammals within the mitigation zone will continue for 30 minutes. Any marine mammal observed after an underwater detonation either injured or exhibiting signs of distress will be reported to Navy environmental representatives from the regional Navy shore commander (Commander, Navy Region Southwest) and U.S. Pacific Fleet, Environmental Office, San Diego Detachment. The Navy will report these events to the Stranding Coordinator of NMFS' Southwest Regional Office using Marine Mammal Stranding communication trees and contact procedures established for the Southern California Range Complex. These voice or email reports will contain the date and time of the sighting, location (or if precise latitude and longitude is not currently available, then the approximate location in reference to an established SSTC beach feature), species description (if known), and indication of the animal's status.</li> </ul> <p>Mitigation for ELCAS/Pile Driving Activities on SSTC oceanside:</p> <ul style="list-style-type: none"> <li>• A mitigation zone will be established at 150 feet or 50 yards from ELCAS pile driving and pile removal events. This mitigation zone is base on the predicted range to Level A harassment (180 dB RMS) for cetaceans, and is being applied conservatively to both cetaceans and pinnipeds.</li> <li>• Monitoring will be conducted within the 150 foot or 50 yard mitigation zone surrounding ELCAS pile driving and removal events for the presence of marine mammals (and other protected species such as sea turtles) before, during, and after pile driving and removal events.</li> <li>• If marine mammals are found within the 150 foot or 50 yard mitigation zone, pile removal events will be halted until the marine mammals (or sea turtles) have voluntarily left the mitigation zone.</li> <li>• Monitoring for marine mammals (or sea turtles) will take place concurrent with pile removal events and 30 minutes prior to pile driving and removal commencement. A minimum of one trained observer will be placed on shore, on the ELCAS, or in a boat at the best vantage point(s) practicable to monitor for marine mammals.</li> </ul>		

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.9 Marine Mammals (Continued)</b>	<ul style="list-style-type: none"> <li>• Monitoring observer(s) will implement shut-down/delay procedures when applicable by calling for shut-down to the hammer operator when marine mammals (or sea turtles) are sighted within the mitigation zone.</li> <li>• Soft Start - Providing additional protection for marine mammals (and sea turtles), ELCAS pile driving includes a soft start as part of normal construction procedures. The pile driver increases impact strength as resistance goes up. At first, the pile driver piston drops a few inches. As resistance goes up, the pile driver piston will drop from a higher distance thus providing more impact due to gravity. This will allow marine mammals in the project area to vacate or begin vacating the area minimizing potential harassment. The ELCAS soft start is not the traditional soft-start used in bigger civilian construction projects, and doesn't include a waiting period (an initial set of several strikes from the impact hammer at 40-60 percent energy levels, followed by a one minute waiting period, then two subsequent 3 strike sets), but does provide additional time for marine mammals to vacate the area.</li> </ul> <p>For underwater detonations on SSTC oceanside under Alternative 1 and 2:</p> <ul style="list-style-type: none"> <li>• The buffer for very shallow water detonations (0 to 24 feet of water) and for shallow water detonations (in 24 to 72 feet of water) will be the same as described for the No Action Alternative.</li> </ul> <p>For SWAG charges laid bayside on SSTC under Alternative 1 and 2:</p> <ul style="list-style-type: none"> <li>• A buffer zone of 180 feet will be established around each SWAG detonation point.</li> <li>• Observer(s) with binoculars and small craft will survey the detonation area and the buffer zone for marine mammals from at least 10 minutes prior to commencement of the scheduled explosive event until at least 10 minutes after detonation. Observers will pay extra attention within the buffer zone to large amounts of floating kelp strands and other marine debris (if any), since these may provide shelter and food for marine mammal prey.</li> <li>• Divers placing charges on mines and dive support vessels will check the area immediately around the mine location for marine mammals.</li> <li>• If a marine mammal is sighted within the buffer zone or moving towards it, exercises will be suspended until the animal has voluntarily left the area and the area is clear of sea turtles and marine mammals for at least 10 minutes.</li> <li>• Immediately following the detonation, visual monitoring for marine mammals within the buffer zone will continue for 10 minutes. Any animals appearing will be observed for signs of injury. Injured marine mammals will be reported to the CNRSW Environmental Director, the PACFLT Environmental Office, and NMFS.</li> </ul> <p>Mitigation for ELCAS/Pile Driving Activities on SSTC oceanside:</p> <ul style="list-style-type: none"> <li>• The Navy proposes, under the associated SSTC marine mammal monitoring plan, to conduct underwater acoustic propagation monitoring during the first available ELCAS deployment at the SSTC under the Incidental Harassment Authorization application. This acoustic monitoring would provide empirical field data on ELCAS pile driving and removal underwater source levels, and propagation specific to ELCAS training at the SSTC. These results will be used to either confirm or refine the Navy's exposure predictions.</li> </ul>		

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.10 Sea Turtles</b></p>	<ul style="list-style-type: none"> <li>• Underwater detonations, vessel strikes, and noise associated with marine vessels and pile driving are unlikely to adversely impact sea turtles due to their rarity in the SSTC, the concentration of activities in ocean boat lanes, and implementation of mitigation measures.</li> <li>• Training activities under the No Action Alternative may affect, but is not likely to adversely affect, ESA-listed turtles.</li> </ul>	<ul style="list-style-type: none"> <li>• Training tempo would increase; however, impacts are expected to be substantially the same as the No Action Alternative.</li> <li>• Training activities under Alternative 1 may affect, but is not likely to adversely affect, ESA-listed turtles.</li> </ul>	<ul style="list-style-type: none"> <li>• Training tempo would increase; however, impacts are expected to be substantially the same as the No Action Alternative.</li> <li>• Training activities under Alternative 1 may affect, but is not likely to adversely affect, ESA-listed turtles.</li> </ul>
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• Current mitigation measures for pre- and post- underwater detonation and ELCAS monitoring, including restriction of activities when sea turtles are within a buffer zone, will continue to be implemented as they are for marine mammals. Similar mitigation measures for underwater detonations would be implemented for SWAG and ELCAS under Alternatives 1 and 2.</li> </ul> <p>As a result of the informal green sea turtle consultation with NMFS, the Navy will implement an additional mitigation measure:</p> <ul style="list-style-type: none"> <li>• If there are sea turtles known to be equipped with sonic tags in the area of and during pile driving operations, Navy will collaborate with NMFS to analyze movements of these turtles in the immediate area during pile driving. Following any monitoring of sound attenuation associated with pile driving, the Navy will share the results with NMFS and provide recalculations of buffer zones as they are available.</li> </ul>			

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.11 Terrestrial Biological Resources</b></p>	<ul style="list-style-type: none"> <li>• Effects to San Diego Fairy Shrimp would be negligible. With access restrictions, management and conservation measures, training activities may affect, but are not likely to adversely affect, ESA-listed San Diego fairy shrimp.</li> <li>• Potential impacts to federal and state protected plants and invertebrates and CNPS special status plants from air and marine vessel activities are expected to be minimal, as activities occur in the air and below the high tide line. Foot and vehicle traffic may have the greatest effect on terrestrial biological resources; though effects are expected to be temporary and cease at the termination of an activity.</li> <li>• Effects on wildlife would be limited to temporary disturbance under this alternative.</li> </ul>	<ul style="list-style-type: none"> <li>• Foot traffic in vernal pool areas could adversely impact individual fairy shrimp. However, impacts would be minimized, due to the low levels of foot traffic that would occur in the pools, exclusion of certain pools from any access at any time to training, and the limitation of activities in training-accessible to when those vernal pools are dry. Potential impacts to the San Diego fairy shrimp are also associated with emergency vehicle use in emergency situations in the vernal pool area. With access restrictions, management and conservation measures, training activities may affect, but are not likely to adversely affect, San Diego fairy shrimp. The USFWS signed a Biological Opinion (signed July 7, 2010) concluding that the Proposed Action would not jeopardize the continued existence of the San Diego fairy shrimp.</li> <li>• Potential increased training on SSTC-N beach lanes Blue 2, Orange 1 and Orange 2 could increase impacts to special status plants and invertebrates in these areas while decreasing impacts at other locations. Some trampling of vegetation at these locations is expected, though the overall effect on non-avian biological resources is expected to be short term and of moderate intensity due to the potential overlap of concentrated activities in the dunes and upper beach areas. These activities do not pose long-term impacts, effects are expected to be temporary and cease at the termination of an activity. Increased foot traffic could cause behavioral impacts to surrounding wildlife, though this effect is expected to be temporary.</li> <li>• Various activities have the potential to impact Brand's phacelia within the Bravo training area.</li> </ul>	<ul style="list-style-type: none"> <li>• Effects of Alternative 2 would be different from those under Alternative 1 because of the increased access to SSTC-N oceanside training lanes. Activity levels would not increase, so effects from those activities which access the SSTC-N lanes would be spread more widely across the ROI. Plants and animals in the unrestricted training lanes could be more affected due to the increase in frequency of use, whereas plants and animals in other lanes could be less affected due to reduced usage.</li> </ul>

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.11 Terrestrial Biological Resources</b> <b>(Continued)</b></p>	<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• Under the No Action Alternative and Alternative 1, Vehicle Patrolling and LARC V Operator Training are limited to training lanes Yellow 1 and 2 and Green 1 and 2, and will not occur in Red, Blue, or Orange Beach Lanes.</li> <li>• For the San Diego fairy shrimp, under the Proposed Action, the Navy will avoid vernal pools occupied by San Diego fairy shrimp and their watersheds when designating parachute drop zones in SSTC-S Inland. Vernal pools will be identified to assure that drop zones are located at least 30 m (100 ft) from each occupied pool. The Navy will restrict parachutists to the southern portion of the established Kaufman drop zone.</li> <li>• The Navy will consider the location of vernal pools occupied by San Diego fairy shrimp and their watersheds when planning training involving off-road foot traffic at SSTC-S Inland. To the maximum extent consistent with training need, off-road foot traffic will avoid the occupied vernal pools and their watersheds. The Navy will avoid the occupied vernal pools and their watersheds adjacent to the road at SSTC-S Inland (i.e., pools 1 through 7 marked with flexi-stakes) year round to the maximum extent consistent with training need. Avoidance may be accomplished using markers, maps, GPS coordinates or any other means consistent with training needs. Training would not be allowed in the remaining vernal pools when conditions are wet. Foot traffic would be permitted in the pools when conditions are dry.</li> <li>• The Navy will be completing and submitting a Vernal Pool Management and Monitoring Plan to the USFWS and the California Coastal Commission in order to help identify whether the impacts identified in this EIS remain at the low levels expected. The Plan will include focused invasive plant survey in the pools and their watersheds; plant, topographic, hydrological, and water quality surveys (including salinity); and protocol fairy shrimp surveys. The Vernal Pool Management and Monitoring Plan will list: 1) what criteria are used to determine that the pools are dry, and 2) who makes the “dry” determination, i.e., the qualifications of the person responsible for determining wet and dry conditions. The Plan will identify measures to minimize the potential for adverse effects to fairy shrimp from weed abatement, pool restoration, or pool augmentation. The Navy will be establishing the baseline distribution and abundance of San Diego fairy shrimp and condition of the vernal pool habitat prior to initiating training activities in or around the vernal pools at SSTC-S Inland. The Navy will report monitoring results and any observed incidental take to the USFWS and California Coastal Commission annually, and will adjust management to the vernal pools occupied by San Diego fairy shrimp to minimize any training impacts detected by monitoring. If impacts are more than the low levels anticipated or impacts could lead to the extirpation of fairy shrimp from any individual pool, then the Navy will reinitiate consultation with the USFWS.</li> <li>• Current natural resource protection measures would continue, such as those derived through Navy Instructions, ecosystem-based planning in the INRMPs, and the employment of best management practices and standard operating procedures to avoid and minimize environmental impacts. Existing measures include invasive species control, erosion control, inventory, monitoring, and habitat enhancement.</li> </ul>		

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.12 Birds</b></p>	<ul style="list-style-type: none"> <li>• Current management practices restrict activities from occurring in some nesting areas during the breeding season, particularly three SSTC-N beach lanes Blue 2, Orange 1, and Orange 2 as well as Delta North and South.</li> <li>• Potential impacts from air and marine vessel activities, as well as LCAC activities are expected to be minimal to nesting species, as activities occur or are scheduled for areas with no or minimal nesting.</li> <li>• If there are birds found diving or circling around an underwater detonation point, activities will be halted until the birds have left the area, which minimizes the potential for blast impacts to diving birds.</li> <li>• Habitat for nesting and foraging migratory land birds, as well as for shorebirds and seabirds may be degraded due to the presence of foot traffic and from land detonations and pyrotechnics. None of these temporary effects are expected to have an adverse effect on migratory birds at the population level.</li> <li>• The majority of beach activities occur away from nests on the beach, below the high tide line. Activities occurring near the nesting area potentially affect nesting birds. However, current management practices minimize adverse effects.</li> </ul>	<ul style="list-style-type: none"> <li>• Alternative 1 would have additional effects on birds. The increased frequency and intensity of these activities would encourage birds to avoid the area.</li> <li>• Vehicle patrolling and testing at SSTC-N would minimally impact nesting migratory birds or shorebird foraging under this Alternative, because these activities would be restricted to specific training lanes.</li> <li>• Habitat for nesting and foraging migratory land birds, as well as for shorebirds and seabirds may be degraded due to the presence of foot traffic, and noise from pyrotechnics. While impacts to nesting habitats would increase under this Alternative, existing infrastructure, training requirements, scheduling needs, and mitigation measures will naturally pull activities away from these habitat areas, minimizing impacts. None of the temporary effects from training are expected to have an adverse effect on migratory birds at the population level.</li> <li>• Losses in California least terns and western snowy plover nesting is expected to be minimally increased from current, No Action Alternative levels. Current and proposed mitigation measures well compensate for these losses.</li> <li>• The Navy has consulted with the USFWS under Section 7 of ESA. The USFWS concluded that the proposed action is not likely to jeopardize the continued existence of ESA-listed species (signed Biological Opinion, July 7, 2010).</li> </ul>	<ul style="list-style-type: none"> <li>• Effects are the same as described for the No Action Alternative for air and marine vessel activities as well as LCAC and ELCAS activities. Effects of other activities are the same as Alternative 1.</li> <li>• Under Alternative 2, training has the option of going into Lanes 8, 9, and 10 and impact nesting birds there. Migratory birds that coincidentally use this area would also be impacted. Military activities will not often go into these training lanes, however, due to the infrastructure, training requirements, scheduling needs, and mitigation measures causing activities to naturally gravitate away from nesting areas.</li> <li>• Losses in California least terns nesting is expected to increase, and losses to western snowy plover nesting is expected to be minimally increased from current, No Action Alternative levels. Current and proposed mitigation measures well compensate for these losses.</li> </ul>

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.12 Birds (continued)</b></p>	<ul style="list-style-type: none"> <li>• Loss in California least tern nesting historically has been and is expected to continue to be small when compared to overall nesting levels. Current mitigation measures well compensate for these losses.</li> </ul>		
	<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• Current mitigation measures include: communication and coordination of training area protocols, nest relocation, predator management and control, habitat modification, site preparation, nest substrate enhancement, signage and education, recreational use restriction, rearing of collected eggs, injured, and sick individuals, a western snowy plover health study, and monitoring.</li> <li>• Under Alternative 1, vehicle patrolling and LARC V Operator Training would not occur in Red, Blue or Orange Beach Lanes. Observation for birds will be conducted prior to and after underwater detonations and detonation activities would be delayed if flocks of diving birds are present. Mitigation measures are described in detail in Sections 3.12.4, 3.12.3.2.1, 3.12.3.2.2 and 3.12.3.2.3.</li> <li>• Develop and implement a Long-term Site Enhancement Plan that includes invasive vegetation control on SSTC oceanside beach lanes, establishing dunes on the windward (west) edges of Delta North and South that would enhance this area for plovers, create a source of sand for the least tern nesting area, and establish a better visual barrier between SR-75 and the nesting colony.</li> <li>• Install temporary barriers and improved signage on the southern end of SSTC-N to more clearly notify the public of the Navy’s exclusive use of SSTC-N beach and existing restrictions on public usage of those beaches.</li> <li>• The Navy will consider the tide conditions when developing training schedules, and schedule training activities that could be conducted on the hardpack during low tides when consistent with training needs.</li> <li>• The Navy will mark and buffer up to 22 concurrent snowy plover nests established at SSTC-N and SSTC-S beaches plus any additional nests that exceed 22 that are initiated in beach lanes Orange 1 and Orange 2.</li> <li>• Under baseline conditions, the southern 3 beach lanes are marked to facilitate avoidance of tern and plover nests. The Navy is developing a marking strategy to delineate least tern and snowy plover nesting areas that does not encumber training activities. Such a marking strategy may entail signage affixed to existing beach lane sign posts and a limited number of additional markers.</li> <li>• The Navy will delineate the boundary of SSTC-S that parallels the mean high tide line in a manner that does not encumber training exercises.</li> </ul>		

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.12 Birds (Continued)</b>	<p><b>Mitigation (Continued):</b></p> <ul style="list-style-type: none"> <li>• If relocation of any least tern or snowy plover nest/egg is necessary as a protective measure, each nest/egg will be relocated the shortest distance possible into suitable habitat by Service-approved monitors to increase the chances for nest success. The weekly reports to be submitted to the CFWO under the proposed project will include: a) date the nests/eggs were moved, b) number of nests/eggs moved, c) original and ending location of nests/eggs moved, and (d) distance the nests/eggs were moved.</li> <li>• The NBC Natural Resources staff will brief all dog handlers annually, or more frequently if necessary, of guidelines pertaining to the use of military working dogs on SSTC beaches. Military working dog handlers will be notified weekly of the locations of plover nests and, to the maximum extent possible, remain a minimum of 30 m (90 ft) from markers that delineate the locations of nesting plovers. Outside of the nesting season (15 Sept through end of February), training may occur unencumbered.</li> <li>• Physical conditioning will primarily occur on the hard pack sand on SSTC oceanside beaches. If physical conditioning on soft pack sand is necessary, handlers and military working dogs will run on the sand road (SSTC-N only) or within 20 feet of the hard pack sand (SSTC-S only) to reduce the disturbance and impact to nesting terns and plovers.</li> <li>• At SSTC-N, military working dogs will exercise primarily between beach lanes Yellow 1 and Blue 1, where they may cross the beach to get to the sand road at the existing route immediately to the north of the demo pit. The Navy will not conduct physical conditioning using dogs in the southern three beach lanes until: a) completing a study to evaluate the effects of military working dogs on terns and plovers and b) coordinating with the USFWS to develop conservation measures to minimize any additional effects. The Navy will submit the study design and scope of work to the Service for review and approval. The Navy will allow the Service 30 days to submit comments and an additional 30 days to approve the final study design and scope of work.</li> <li>• If military working dog training is requested as part of Platoon Over-the-Beach activities at SSTC-N, these activities will be scheduled in beach lanes Yellow 1, the north half of Yellow 2, Green 1 or Green 2, pending the results of the Navy's study to evaluate the response of terns and plovers to military working dog presence.</li> <li>• The Navy will coordinate with the Service in the development of the Long Term Habitat Enhancement Plan for SSTC and will submit the plan to the Service for review and approval. . The Navy will allow the Service 30 days to submit comments and an additional 30 days to approve the final study design and scope of work.</li> <li>• The Navy will include the following information in the yearly reports to be submitted to the USFWS under the proposed project: a) the number and distribution of terns and plovers observed in each training lane; b) the number of any dead or injured least terns or snowy plovers (including eggs, chicks or adults) observed in each training lane; c) the hatching rate of terns and plovers in each beach lane; d) maps of the locations of tern and plover roosts within the action area; e) the timing and number of training events within the southern 3 beach lanes, and other beach lanes, to the extent available; f) the date and condition of any dead or injured tern or plover; and g) any measures taken to prevent additional tern or plover death or injury.</li> <li>• The Navy will ensure that biological monitors look for and document the location of least tern or snowy plover nests, eggs and chicks prior to and after all military training exercises, to allow assessment of take associated with training activities.</li> </ul>		

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.12 Birds</b> <b>(Continued)</b>	<p><b>Mitigation (Continued):</b></p> <ul style="list-style-type: none"> <li>• The Navy will provide California Coastal Commission staff monitoring reports prepared for the U.S. Fish and Wildlife Service under the July 7, 2010 Biological Opinion .</li> <li>• Consistent with other applicable laws and to the extent possible and practical, the Navy will maintain signs and enforce the existing ban on the public bringing nonmilitary working dogs to Navy-controlled beaches.</li> </ul>		
<b>3.13 Cultural Resources</b>	<ul style="list-style-type: none"> <li>• Vehicular activities and other ground disturbing activities are excluded from cultural resource sites and their immediate surrounding areas. Foot traffic does not constitute an adverse effect.</li> <li>• Training activities may occur in areas with known submerged cultural resources; however, resources are avoided as necessary to prevent damage.</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicular activities and other ground disturbing activities are excluded from cultural resource sites and their immediate surrounding areas. Foot traffic does not constitute an adverse effect.</li> <li>• Training activities may occur in areas with known submerged cultural resources; however, resources would be avoided as necessary to prevent damage.</li> </ul>	<ul style="list-style-type: none"> <li>• The effects of Alternative 2 on cultural resources would be to the same as those described under Alternative 1.</li> </ul>
<p><b>Mitigation:</b></p> <p>The Navy currently employs the following management practices to avoid impacts to cultural resources: restricts digging near any cultural resource site that is known to be eligible for listing in the National Register of Historic Places (NRHP), limits of operational training access on or across the recorded areas of eligible or potentially eligible archaeological sites to foot traffic only, and no alteration or damage to the appearance, structure, or features of NRHP-eligible built properties is permitted without appropriate Section 106 review and compliance.</p>			

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.14 Transportation and Circulation</b></p>	<ul style="list-style-type: none"> <li>• Intersections and roadways within the ROI experience an acceptable Level of Service (LOS). Although the intersections at Gates 1 and 2 experience unacceptable LOS, traffic related to the No Action Alternative represents less than 1% of the volume at these intersections.</li> <li>• Marine traffic is diverted from training areas while some training is being conducted; however, vessels are not prevented from getting to their desired locations.</li> </ul>	<ul style="list-style-type: none"> <li>• Increases in military training vehicle trips per day would represent less than 2% of the total daily traffic and would be well within the capacities of the existing regional roadway network.</li> <li>• Intersections and roadways within the ROI experience an acceptable LOS. Although the intersections at Gates 1 and 2 experience unacceptable LOS, traffic related to Alternative 1 represents less than 1% of the morning volume and less than 2% of the evening traffic at these intersections.</li> <li>• Marine traffic is diverted from training areas while some training is being conducted; however, vessels are not prevented from getting to their desired locations.</li> </ul>	<ul style="list-style-type: none"> <li>• Potential effects on transportation and circulation from Alternative 2 would be the same as effects from implementation of Alternative 1.</li> </ul>
	<p><b>Mitigation:</b> The Navy strives to ensure that it retains access to oceanside and bayside training areas as necessary to accomplish its mission, while facilitating joint military-civilian use of such areas to the extent practicable and consistent with safety. These goals of military access, joint use, and safety are promoted through various coordination and outreach measures, including publication of potentially hazardous activities planned for the oceanside and bayside areas through Notices to Mariners issued by the U.S. Coast Guard.</p>		

**Table ES-2: Summary of Effects (Continued)**

Resource	No Action Alternative	Alternative 1	Alternative 2
<p><b>3.15 Socioeconomics, Environmental Justice, and Protection of Children</b></p>	<ul style="list-style-type: none"> <li>• Navy presence currently has a beneficial socioeconomic impact on the region.</li> <li>• EO 12898 – There are no disproportionately high and adverse human health or environmental effects of the No Action Alternative on minority populations and low-income population or Indian tribes.</li> <li>• EO 13045 – Under the No Action Alternative no disproportionate environmental health and safety risks specific to children are expected.</li> </ul>	<ul style="list-style-type: none"> <li>• Socioeconomics - Existing regional population and associated housing impacts, employment rates, and regional economy would remain unchanged.</li> <li>• EO 12898 – There would be no disproportionately high and adverse human health or environmental effects of Alternative 1 on minority populations and low-income populations or Indian tribes.</li> <li>• EO 13045 – Under Alternative 1 no disproportionate environmental health and safety risks specific to children are expected.</li> </ul>	<ul style="list-style-type: none"> <li>• Impacts are expected to be the same as Alternative 1.</li> </ul>
<p><b>Mitigation:</b> Mitigation measures proposed for other resources (e.g., Water Resources [Section 3.5], Acoustic Environment [Section 3.6], and Public Health and Safety [Section 3.16]) would serve to further minimize effects related to environmental justice and protection of children.</p>			

Table ES-2: Summary of Effects (Continued)

Resource	No Action Alternative	Alternative 1	Alternative 2
<b>3.16 Public Health and Safety</b>	<ul style="list-style-type: none"> <li>• Routine training activities conducted within SSTC pose little risk to public health or safety outside of the training areas.</li> <li>• Risks to the public from rotary-wing aircraft supporting SSTC training is minimal, based on past safety record, low number of flights, and over-water flight paths.</li> <li>• Risks to the public from marine vessels supporting SSTC training and small craft participating in training are minimal based on past safety record and established right-of-way conventions and avoidance procedures.</li> </ul>	<ul style="list-style-type: none"> <li>• On-site training activities would increase. The Navy would continue to implement Range Control Coordination Procedures to avoid public safety issues. Unauthorized access may decrease because more frequent and visible use of beach training areas by military units could discourage the public from entering beach training areas.</li> <li>• Air support and marine vessel support would increase, but for the reasons noted under the No Action Alternative, public safety would be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>• Impacts would be similar to those under Alternative 1. Increased training and more visible use of Blue 2, Orange 1, and Orange 2 may further discourage unauthorized access.</li> </ul>
	<p><b>Mitigation:</b> Mitigation measures for other resources that affect public health and safety (e.g. noise, hazardous materials and waste, water resources) would be implemented. Current measures in place to ensure that nonparticipants are not endangered by Navy actions would continue: buffers for underwater detonations, existing guards and/or gates around many training areas, and monitoring for non-participants during training.</p>		

## ES 1.14 OTHER REQUIRED CONSIDERATIONS

### ES 1.14.1 Possible Conflicts with Objectives of Federal, State, and Local Plans, Policies, and Controls

Implementation of the Navy's alternatives, including the Proposed Action for the SSTC EIS, would not conflict with the objectives or requirements of federal, state, regional, or local plans, policies, or legal requirements. The Navy has consulted with regulatory agencies as appropriate during the NEPA process and prior to implementation of the Proposed Action to ensure requirements are met. A full description is provided in Chapter 6 but is summarized for consultations in the following table. Appendix G provides a list of the Silver Strand Training Complex (SSTC) regulatory agency consultation documentation. Agency correspondence and supporting documentation can be found on the SSTC EIS website at [www.silverstrandtrainingcomplexeis.com](http://www.silverstrandtrainingcomplexeis.com).

**Table ES-3: Summary of Environmental Compliance for the Proposed Action**

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
Coastal Zone Management Act (CZMA) (16 C.F.R. §§ 1451 <i>et seq.</i> )	California Coastal Commission (CCC)	<p>A Coastal Consistency Determination (CCD) was prepared in compliance with the CZMA, which states that Federal actions that have reasonably foreseeable effects on coastal uses or resources must be consistent to the maximum extent practicable with the enforceable policies of approved state coastal management programs. Applicable sections of the California Coastal Act of 1976 (14 California Code of Regulations § 13001 <i>et seq.</i>) were thoroughly analyzed against the Proposed Action.</p> <ul style="list-style-type: none"> <li>• The Navy submitted the CCD to the CCC on May 26, 2010.</li> <li>• Coastal Consistency Determination conditional concurrence received on August 17, 2010.</li> <li>• The Navy submitted a conditional concurrence response letter to the California Coastal Commission on August 20, 2010.</li> <li>• Final Consistency Determination Notification letter to California Coastal Commission dated November 23, 2010. The Navy determined that the conditions of concurrence proposed by the California Coastal Commission are not necessary for the proposed activities to be consistent to the maximum extent practicable with the applicable enforceable policies of the California Coastal Management Program (CCMP) as the Navy's proposed activities are consistent to the maximum extent practicable with the CCMP.</li> </ul>
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1802)	National Oceanic and Atmospheric Administration (NOAA) - National Marine Fisheries Service (NMFS)	Implementation of the Proposed Action would result in a direct effect on eelgrass. However, based upon the minimal short-term impacts associated with the Proposed Action and extensive mitigation through eelgrass planting, there will not be any adverse effects to Essential Fish Habitat (EFH). The Navy submitted an EFH assessment to NMFS that reviews the impacts of the Proposed Action on EFH that includes applicable mitigation measures. The Navy has completed consultation NMFS and has received concurrence that with implementation of mitigation measures, there will not be any adverse effects to Essential Fish Habitat (EFH).

**Table ES-3: Summary of Environmental Compliance for the Proposed Action (Continued)**

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1802) (Continued)	National Oceanic and Atmospheric Administration (NOAA) - National Marine Fisheries Service (NMFS)	<ul style="list-style-type: none"> <li>• The Navy submitted an EFH assessment to NMFS on March 22, 2010.</li> <li>• EFH updated to reflect discussions during the consultation process. A revised EFHA was submitted (September 27, 2010) to NMFS with inclusion of measures in the proposed action to include updated benthic habitat mapping, prevent beach survey, eelgrass mitigation, and underwater detonation reporting.</li> <li>• Consultation with NMFS was completed on (November 10, 2010) with the Navy's submission of its response letter to NMFS.</li> </ul>
Endangered Species Act (ESA) (16 U.S.C. §§ 1531 et seq.)	U.S. Navy, U.S. Fish and Wildlife Service (USFWS)	<p>The EIS analyzes potential effects to species listed under the ESA. In accordance with ESA requirements, the Navy has completed consultation under Section 7 of the ESA with USFWS and which indicates that the Proposed Action may affect, not likely to adversely affect, ESA-listed species. With regard to USFWS jurisdiction over species present in SSTC, the Navy has conducted its activities in accordance with any applicable Biological Opinions.</p> <ul style="list-style-type: none"> <li>• The Navy initiated consultation with USFWS on September 22, 2008.</li> <li>• Between November 18, 2008 and April 27, 2009, the Navy and USFWS met regularly to discuss the Proposed Action, effects to species and associated incidental take, and conservation measures to avoid, minimize, and monitor impacts.</li> <li>• USFWS provided a draft Biological Opinion to the Navy for review and comment on August 28, 2009. The Navy provided preliminary comments on the draft biological opinion on September 28, 2009. The Navy and USFWS discussed the Navy's comments at meetings held on September 21 and September 29, 2008. USFWS addressed these comments and provided a revised draft biological opinion to the Navy on January 15, 2010. The Navy provided additional comments on the revised draft Biological Opinion to USFWS, via electronic mail, on March 3, 2010. The Navy and USFWS discussed the Navy's additional comments at meetings held on March 4 and May 26, 2010. The USFWS addressed the Navy's comments in the final Biological Opinion.</li> </ul> <p>USFWS Biological Opinion signed on July 7, 2010 (FWS-SDG-08B0503-09F0517).</p>
Endangered Species Act (ESA) (16 U.S.C. §§ 1531 et seq.)	U.S. Navy and NMFS	<p>The Navy has also conducted informal consultation with NMFS for the green sea turtle. In accordance with ESA requirements, the Navy has completed informal consultation under Section 7 of the ESA with NMFS. NMFS has concurred that that the Proposed Action may affect, but is not likely to adversely affect, ESA-listed species.</p> <ul style="list-style-type: none"> <li>• The Navy initiated informal consultation with NMFS for potential impacts to green sea turtles on March 15, 2010.</li> </ul>

**Table ES-3: Summary of Environmental Compliance for the Proposed Action (Continued)**

<b>Plans, Policies, and Controls</b>	<b>Responsible Agency</b>	<b>Status of Compliance</b>
Endangered Species Act (ESA) (16 U.S.C. §§ 1531 et seq.) (Continued)	U.S. Navy and NMFS	<ul style="list-style-type: none"> <li>• The Navy coordinated two exchanges of comments and responses with NMFS.</li> <li>• NMFS informal consultation on green sea turtles completed with letter of concurrence on (November 17, 2010).</li> </ul>
Marine Mammal Protection Act (16 U.S.C. §§ 1431 <i>et seq.</i> )	NOAA-NMFS	<p>The Navy has submitted an application for an IHA to NMFS per the requirements of MMPA for proposed training activities that have the potential to incidentally take marine mammals.</p> <ul style="list-style-type: none"> <li>• Received comments from NMFS on the IHA request on September 9, 2010.</li> <li>• The Navy submitted the Final IHA to NMFS on September 15, 2010.</li> <li>• Notice of Receipt of the IHA request published in the Federal Register on (October 19, 2010).</li> <li>• After consideration of public comments on the IHA application, NMFS may grant the authorization to take small numbers of marine mammals by harassment if it finds that the taking will have a negligible impact on the species or stock(s) on subsistence uses (where relevant). NMFS will identify appropriate mitigation, monitoring and reporting requirements.</li> </ul>

#### **ES 1.14.2 Relationship between Short-term Uses and Long-term Productivity**

The majority of activities addressed in the EIS would be categorized as long-term. For example, although the use of training areas for individual training activities (e.g., breacher) may be of short duration, the training areas would continue to receive increased and repeated use for the foreseeable future. As the Proposed Action includes an increase in training tempo, areas designated for training would accommodate a higher level of operational uses in the long-term which would, in turn, affect the long-term productivity of environmental resources in those areas. The Navy's proposal to increase access and availability of SSTC-N and SSTC-S oceanside beach training lanes and SSTC-S inland areas for military training is an example of the balancing of long-term productivity of the environment with the need to address range capability shortfalls. Addressing such shortfalls through planning and accommodation of future training tempo requirements and deployment schedules will allow the Navy to more readily facilitate long-term resource management strategies while achieving the near-term goal of providing the capacity and capabilities to fully support required training tasks and meet the Title 10 mandate.

#### **ES 1.14.3 Irreversible or Irretrievable Commitment of Resources**

Increased training activities at the SSTC would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline construction equipment. Implementation of the Proposed Action would require fuels used by aircraft, vessels, and ground-based vehicles. Since fixed- and rotary-wing flight, amphibious vessels, and small craft activities could increase, total fuel use would increase. Fuel use by ground-based vehicles involved in training activities would also increase. Therefore, total fuel consumption would increase and this nonrenewable resource would be considered irreversibly lost.

**ES 1.14.4 Energy Requirements and Conservation Potential**

Increased training activities on SSTC would result in an increase in energy demand over the No Action Alternative. Although the required electricity demands would be met by the existing electrical infrastructure at SSTC, energy requirements would be subject to any established energy conservation practices. The use of energy sources would be minimized wherever possible without compromising safety, training, or testing operations.

**ES 1.14.5 Natural or Depletable Resource Requirements and Conservation Potential**

Resources that will be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels. To the extent practicable, pollution prevention considerations are included. In addition, sustainable range management practices are in place that protect and conserve natural and cultural resources while preserving of access to training areas for current and future training requirements.

## Acronyms and Abbreviations

AAAV	Advanced Amphibious Assault Vehicle	CHPMM	Center for Health Promotion and Preventative Medicine
AAV	Amphibious Assault Vehicle		
AB	Assembly Bill	CISS	cast-in-steel-shell
ABLTS	Amphibious Bulk Liquid Transfer System	CLZ	Craft Landing Zone
ACS	American Community Survey	CMP	Coastal Management Plan
ADT	average daily trips	CNEL	Community Noise Equivalent Level
AESO	Aircraft Environmental Support Office	CNO	Chief of Naval Operations
AGL	Above Ground Level	CNPS	California Native Plant Society
AICUZ	Air Installation Compatible Use Zone	CNRSW	Commander Navy Region Southwest
AMNS	Airborne Mine Neutralization System	CO	Carbon Monoxide
AOU	American Ornithologists Union	CO <sub>2</sub>	Carbon Dioxide
APCD	Air Pollution Control District	COMNAVSPECWARCOM	Commander, Naval Special Warfare Command
APE	Area of Potential Effect	COMNAVSURFPAC	Commander, Naval Surface Force, U.S. Pacific Fleet
APHIS	Animal and Plant Health Inspection Service		
APZ	Accidental Potential Zone	COMPACFLT	Commander, U.S. Pacific Fleet
ARD	Audible Recall Device	CPS	Coastal Pelagic Species
ARPA	Archaeological Resources Protection Act	CQC	Close Quarters Combat
ASBS	Areas of Special Biological Significance	CQD	Close Quarters Defense
ASDS	Advanced SEAL Delivery System	Cr	Coastal Beaches (soil type)
AUV	Autonomous Underwater Vehicle	CRE	Comprehensive Range Evaluation
BA	Biological Assessment	CRMP	Coordinated Resource Management & Planning Council
BASH	Bird/Animal Aircraft Strike Hazard	CRRC	Combat Rubber Raiding Craft
BCC	Birds of Conservation Concern	CSC	California Special Concern
BEPA	Bald Eagle Protection Act	CT	California Threatened
BIU	Beach Interface Unit	CUPA	Certified Unified Program Agency
BMP	Best Management Practice	CV	Coefficient of Variation
BO	Biological Opinion	CVN	Nuclear Powered Aircraft Carrier
BP	before present	CWA	Clean Water Act
BSSC	Bird Species of Special Concern	CZMA	Coastal Zone Management Act
BTU	Beach Termination Unit	DA	Direct Action Operations
BUD/S	Basic Underwater Demolition/SEAL	dB	decibel
C	Candidate	dBA	A-weighted decibel
C-4	Composition 4	dBc	C-weighted decibel
CAA	Clean Air Act	dBp	peak decibel
CAAA	Clean Air Act Amendments	DDT	dichlorodiphenyltrichloroethane
CAAQS	California Ambient Air Quality Standards	DO	Dissolved Oxygen
CalCOFI	California Cooperative Oceanic Fisheries Investigations	DoD	Department of Defense
Cal-EPA	California Environmental Protection Agency	DoN	Department of the Navy
Caltrans	California Department of Transportation	DNL	Day-Night Noise Level
CARB	California Air Resources Board	DTSC	Department of Toxic Substances Control
CASHPO	California State Historic Preservation Office	DWT	dead weight tons
CCA	California Coastal Act	DZ	Drop Zone
CCC	California Coastal Commission	EA	Environmental Assessment
CCD	Coastal Consistency Determination	EFD	Energy Flux Density
CCP	Comprehensive Conservation Plan	EFH	Essential Fish Habitat
CCR	California Code of Regulations	EFV	Expeditionary Fighting Vehicle
CDFG	California Department of Fish and Game	EIS	Environmental Impact Statement
CDNL	C-weighted Day Night Level	ELCAS	Elevated Causeway System
CDPR	California Department of Parks and Recreation	EMFAC	Emission Factors
CDMG	California Department of Mines and Geology	EMR	Electromagnetic Radiation
CE	State Endangered	EO	Executive Order
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	EOD	Explosive Ordnance Disposal
CEQ	Council on Environmental Quality	EODGRU	Explosive Ordnance Disposal Group
		EPA	Environmental Protection Agency
CFP	CDFG Fully Protected	EPCRA	Emergency Planning and Community Right-to-Know Act
CFR	Code of Federal Regulations		
CGS	California Geological Survey	ESA	Endangered Species Act

ESQD	Explosive Safety Quantity Distance	$L_{eq}$	Equivalent Noise Level
EWTGPAC	Expeditionary Warfare Training Group Pacific	LIDAR	Light Detection and Ranging
°F	degrees Fahrenheit	LOS	level of service
FC	Federal Candidate Species	LUPZ	Land Use Planning Zones
FE	Federal Endangered	LZ	Landing Zone
FEIS	Final Environmental Impact Statement	m	meter(s)
FFCA	Federal Facilities Compliance Act	m <sup>2</sup>	square meter(s)
FM	Frequency Modulated	m <sup>3</sup>	cubic meter(s)
FMP	Fishery Management Plan	MAGTF	Marine Air Ground Task Force
FOD	foreign object debris	MAT	Maintenance and Training
FRTTP	Fleet Readiness Training Plan	MATLAB	Matrix Laboratory
FSC	Federal Species of Concern	MBTA	Migratory Bird Treaty Act
FT	Federal Threatened	MC	Munitions Constituent
FTX	Field Training Exercise	MCAS	Marine Corps Air Station
g	gram(s)	MCB	Marine Corps Base
GHG	Greenhouse Gas	MCM	Mine Countermeasures
GPS	Global Positioning System	MCT	Marine Corps Task
ha	hectare(s)	MW	mini-enclosure
HAP	Hazardous Air Pollutant	MEC	munitions and explosives of concern
HAPC	Habitat Area of Particular Concern	MEF	Marine Expeditionary Force
HC	High Concern	mg	milligram
Md	Made Lands (soil type)	MHHW	Mean Higher High Water
HERF	Hazards of Electromagnetic Radiation to Fuel	MIC	Marina Loamy Coarse Sand (soil type)
HERO	Hazards of Electromagnetic Radiation to Ordnance	MLLW	Mean Lower Low Water
HERP	Hazards of Electromagnetic Radiation to Personnel	MMC	Marine Mammal Commission
HI	Highly Imperiled	MMPA	Marine Mammal Protection Act
HMMWV	High Mobility Multipurpose Wheeled Vehicle	MMR	Military Munitions Rule
HMTA	Hazardous Materials Transportation Act	MMRP	Military Munitions Response Program
HMX	High Melting Explosive	MMS	Marine Mammal Systems
HrC	Huerhuero Loam (soil type)	MOU	Memorandum of Understanding
HRST	Helicopter Rope Suspension Training	MPFUB	Maritime Prepositioned Force Utility Boat
HS	Hydrogen sulfide	mph	mile(s) per hour
HSC	Health and Safety Code	MPS	Maritime Prepositioning Ship
HuC	Huerhuero Urban (soil type)	MRA	Marine Resources Assessment
HWMP	Hazardous Waste Management Plan	MRP	Munitions Response Program
Hz	hertz	msl	mean sea level
I MEF	First Marine Expeditionary Force	MSE	Multiple Successive Explosions
IAD	Immediate Action Drills	msec	millisecond
IBS	Inflatable Boat, Small	MWR	Morale, Welfare, and Recreation
IED	Improvised Explosive Device	μPa	micropascal
IHA	Incidental Harassment Authorization	μg	microgram
INLS	Improved Navy Lighterage System	μm	micron
INRMP	Integrated Natural Resources Management Plan	MSCP	Multiple Species Conservation Plan
IRP	Installation Restoration Program	N	North
ITE	Institute of Transportation Engineers	NAAQS	National Ambient Air Quality Standards
JLOTS	Joint Logistics Over-the-Shore	NAB	Naval Amphibious Base
KCRC	Kumeyaay Cultural Repatriation Committee	NAGPRA	Native American Graves Protection & Repatriation Act
kHz	kilohertz	NASNI	Naval Air Station North Island
kg	kilogram(s)	NAVFACSW	Naval Facilities Engineering Command Southwest
km	kilometer(s)	NAVOCEANO	Naval Oceanographic Office
kph	kilometer(s) per hour	Navy	U.S. Department of the Navy
L	liter	NRWQC	National Recommended Water Quality Criteria
LAMPS	Light Airborne Multipurpose System	NBC	Naval Base Coronado
LAR	Lung Automatic Rebreather	NBG	Naval Beach Group
LARC V	Lighter, Amphibious, Resupply, Cargo-5 ton	NBPL	Naval Base Point Loma
LCAC	Landing Craft, Air Cushion	NCA	National Command Authority
LCM	Landing Craft Mechanized	NCW	Naval Coastal Warfare
LCP	Local Coastal Plan	NDAA	National Defense Authorization Act
LCU	Landing Craft Utility	NDDB	Natural Diversity Database
LD	Lethal Dose	NE	Not Eligible
$L_{dn}$	Day-Night Noise Level		

NECC	Navy Expeditionary Combat Command	RDY	Royal Demolition Explosive
NEMS	Navy Eelgrass Mitigation Sites	RHA	Rivers and Harbors Act
NEPA	National Environmental Policy Act	RHIB	Rigid Hull Inflatable Boat
NEW	Net Explosive Weight		
NHPA	National Historic Preservation Act	REFMS	Reflection and Refraction in Multilayered Ocean/Ocean Bottoms with Shear Wave Effects
nm	nautical mile(s)	RL	Received Exposure Levels
NMFS	National Marine Fisheries Service	RMS	root mean squared
NO <sub>2</sub>	Nitrogen Dioxide	ROD	Record of Decision
NOAA	National Oceanic and Atmospheric Administration	ROG	Reactive Organic Gasses
NOI	Notice of Intent	ROI	Region of Influence
NOLF	Naval Outlying Landing Field	ROWPU	Reverse Osmosis Water Purification Unit
NOTMAR	Notice to Mariners	RRDF	Roll on/Roll Off Discharge Facility
NO <sub>x</sub>	oxides of nitrogen	RSD	Rare in San Diego County
NPDES	National Pollutant Discharge Elimination System	RSEPA	Range Sustainability Environmental Program Assessment
NRC	National Research Council		
NRHP	National Register of Historic Places	RTSWS	Remote Training Site, Warner Springs
NRRF	Naval Radio Receiving Facility	RV	Recreational Vehicle
NRWQC	National Recommended Water Quality Criteria	RWQCB	Regional Water Quality Control Board
NSR	New Source Review	S	South
NSW	Naval Special Warfare	SAIA	Sikes Act Improvement Act
NSWC	Naval Special Warfare Center	SALM	Single Anchor Leg Moor
NTA	Navy Tactical Task (Action)s	SANDAG	San Diego Association of Governments
NTTL	Navy Tactical Task List	SANTEC	San Diego Traffic Engineers Council
NWR	National Wildlife Refuge	SAR	Stock Assessment Report
NWRC	National Wildlife Research Center	SCAQMD	South Coast Air Quality Management District
OAMCM	Organic Airborne Mine Countermeasures	SCE	Southern California Bight
OASIS	Organic Airborne Surface Influence Sweep	SCI	Southern California Eddy
OPA	Oil Pollution Act	SCUBA	Self-Contained Underwater Breathing Apparatus
O <sub>3</sub>	Ozone	SDAB	San Diego Air Basin
OPAREA	Operating Area	SDIA	San Diego International Airport
OPDS	Offshore Petroleum Discharge System	SDUPD	San Diego Unified Port District
OPNAV	Office of the Chief of Naval Operations	SDV	SEAL Delivery Vehicles
OPNAVINST	Chief of Naval Operations Instruction	SEAL	Sea, Air, and Land
OSD	Office of the Secretary of Defense	SEL	Sound Exposure Level
OSP	Optimal Sustainable Population	SIP	State Implementation Plan
OTB	Over-the-Beach	SIT	Squadron Integrated Training
OUB	Operation Utility Boat	SLI	Slight Lung Injury
Pa	Pascals	SMNWR	Sweetwater Marsh National Wildlife Refuge
PAH	polycyclic aromatic hydrocarbons	SO <sub>2</sub>	Sulfur Dioxide
Pb	Lead	SO <sub>4</sub>	Sulfate
PACFLT	U.S. Pacific Fleet	SOC	Special Operations Capable
PCB	polychlorinated biphenyls	SOCAL	Southern California
PCFA	Pacific Coast Feeding Aggregation	SOF	Special Operations Forces
PDM	Program Decision Memorandum	SOP	Standard Operating Procedure
PE	Potentially Eligible	SPCC	Spill Prevention, Control, Countermeasures
PETN	pentaerythritol tetranitrate	SQT	Seal Qualification Training
pH	hydrogen ion concentration (alkalinity)	SRA	Sub Regional Area
PFMC	Pacific Fisheries Management Council	SR	State Route
PM <sub>2.5</sub>	particulate matter less than 2.5 microns	SRO	Sustainable Range Oversight
PM <sub>10</sub>	particulate matter less than 10 microns	SSLC	Silver Strand Littoral Cell
PMAR	Primary Mission Areas	SSTC	Silver Strand Training Complex
POSD	Port of San Diego	SSNP	Silver Strand Natural Preserve
PPA	Pollution Prevention Act	SSSB	Silver Strand State Beach
ppm	parts per million	SUROBS	Surf Observations
ppt	parts per thousand	SV	Sound Velocity
psi	pounds per square inch	SVP	sound velocity profile
R	Radius	SWAG	Shock Wave Generator
RAQS	Regional Air Quality Strategy	SWDA	Solid Waste Disposal Act
RCA	Range Condition Assessment	SWFSC	Southwest Fisheries Science Center
RCD	Required Capabilities Document	SWRCB	State Water Resources Control Board
RCRA	Resource Conservation and Recovery Act		
RDT&E	Research, Development, Test, and Evaluation		

T&E	Test and Evaluation
TAP	Tactical Training Theater Assessment and Planning
TAR	Training Area and Range
TCP	Traditional Cultural Properties
Tf	Tidal Flats (soil type)
TL	transmission loss
TM	tympanic membrane
TMR	tympanic membrane rupture
TNT	Trinitrotoluene
TRAP	Tactical Recovery of Aircraft and Personnel
TRI	Toxic Release Inventory
TS	Threshold Shift
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, or Disposal
TSE	Tactical Support Equipment
TSNWR	Tijuana Slough National Wildlife Refuge
TSS	Total Suspended Solids
TTS	Temporary Threshold Shift
UAS	Unmanned Aircraft System
UJTL	Universal Joint Task List
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	U.S. International Boundary Waters Commission
UUV	Unmanned Underwater Vehicle
UXO	Unexploded Ordnance
VFR	Visual Flight Rules
VSW	Very Shallow Water
W-	Warning Area
WRCC	Western Regional Climate Center
WQCA	Water Quality Control Act
yd	yard(s)
YMCA	Young Men's Christian Association
ZOI	zone of influence
ZOE	zone of exposure