Southern California Range Complex

Final
Environmental Impact Statement / Overseas Environmental Impact Statement

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

Executive Summary

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ES 1 EXECUTIVE SUMMARY

ES 1.1 INTRODUCTION

This Draft Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) analyzes the potential environmental consequences that may result from the United States (U.S.) Navy's Proposed Action and alternatives, which address ongoing and proposed naval activities within the Navy's existing Southern California (SOCAL) Range Complex (Figure ES-1).

This Final EIS/OEIS (hereafter referred to as "EIS/OEIS") has been prepared by the Department of the Navy (DoN) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Section [§] 4321 et seq.); the Counsel on Environmental Quality [CEQ] Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [C.F.R.] §§ 1500-1508); Department of the Navy Procedures for Implementing NEPA (32 C.F.R. § 775); and Executive Order 12114 (EO 12114), Environmental Effects Abroad of Major Federal Actions. This EIS/OEIS satisfies the requirements of NEPA and EO 12114, and will be filed with the U.S. Environmental Protection Agency (USEPA) and made available to appropriate Federal, State, local, and private agencies, organizations, and individuals for review and comment.

The Navy is the lead agency for the EIS/OEIS; the National Marine Fisheries Service (NMFS) is a cooperating agency.

The SOCAL Range Complex is situated off the coast of Southern California, generally between Dana Point and San Diego, and encompasses three primary components: ocean Operating Areas (OPAREAs), Special Use Airspace (SUA), and San Clemente Island (SCI). Extending more than 600 nautical miles (nm) (1,111 kilometers [km]) southwest into the Pacific Ocean, the SOCAL Range Complex encompasses over 120,000 square nautical miles (nm^2) (411,600 square kilometers [km^2]) of sea space, 113,000 nm^2 (387,500 km^2) of SUA, and over 42 nm^2 (144 km^2) of land area (i.e., SCI). For range management and scheduling purposes, the SOCAL Range Complex is divided into numerous subcomponent ranges or training areas which are described in detail in Chapter 2 of the EIS/OEIS (Description of Proposed Actions and Alternatives).

The Navy's mission is to organize, train, equip, and maintain combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. This mission is mandated by Federal law (Title 10 U.S.C. § 5062), which ensures the readiness of the nation's naval forces.[1] The Navy executes this responsibility by establishing and executing training programs, including at-sea training and exercises, and ensuring naval forces have access to the ranges, OPAREAs, and airspace needed to develop and maintain skills for the conduct of naval operations. Activities involving Research, Development, Test, and Evaluation (RDT&E) for naval systems are an integral part of this readiness mandate.

[1] Title 10, Section 5062 of the United States Code provides: "The Navy shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea. It is responsible for the preparation of Naval forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with Integrated Joint Mobilization Plans, for the expansion of the peacetime components of the Navy to meet the needs of war."

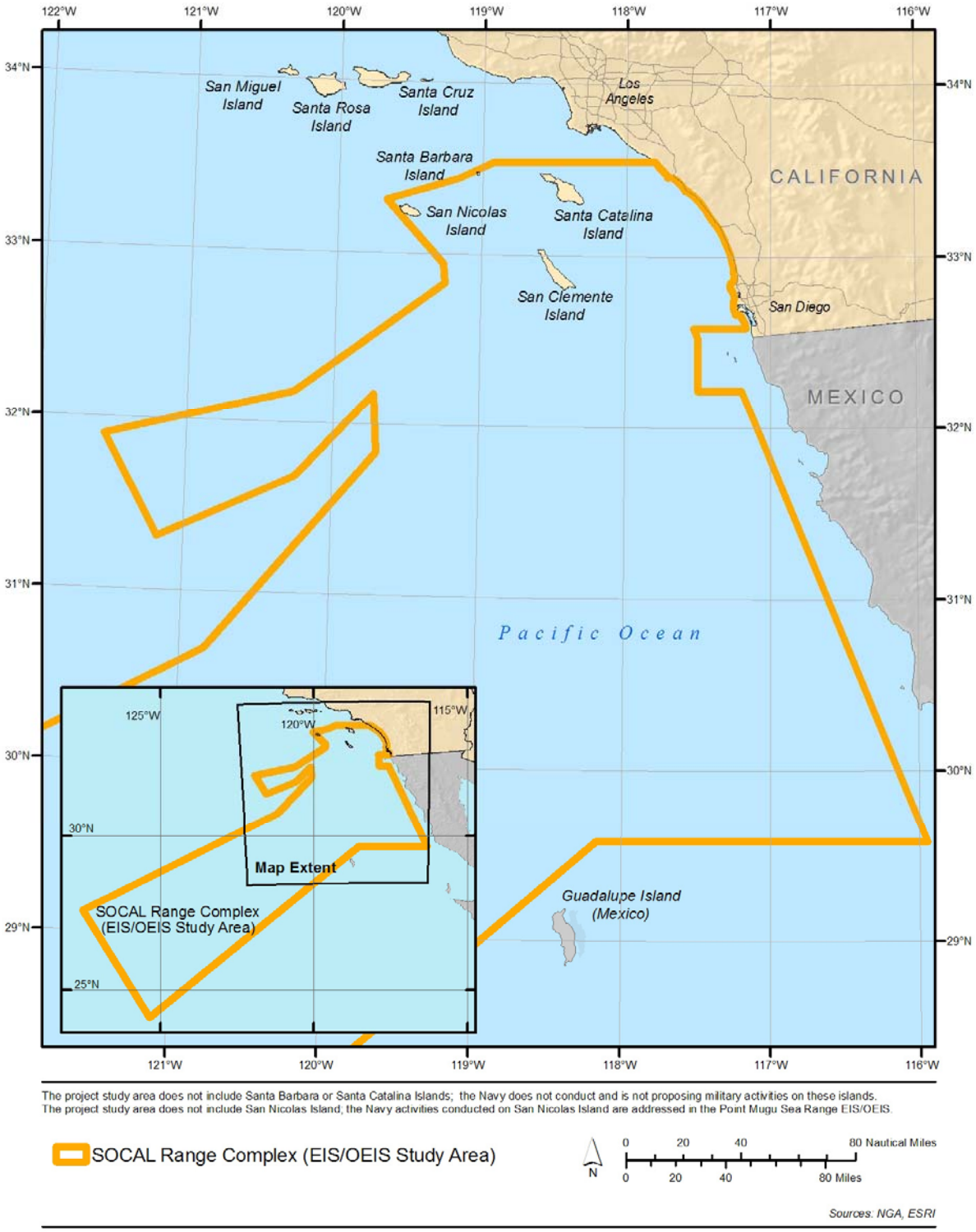

Figure ES-1: Detail of SOCAL Range Complex

ES 1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The mission of the SOCAL Range Complex is to serve as the principal Navy training venue in the eastern Pacific to support required current, emerging, and future training. The purpose of the Proposed Action is to achieve and maintain Fleet readiness using the SOCAL Range Complex, while enhancing training resources through investment on the ranges.

The need for the Proposed Action is to enable the Navy to meet its statutory responsibility to organize, train, equip, and maintain combat-ready naval forces and to successfully fulfill its current and future global mission of winning wars, deterring aggression, and maintaining freedom of the seas.

The existing SOCAL Range Complex plays a vital part in the execution of this naval readiness mandate. The region surrounding San Diego, California, is home to the largest concentration of U.S. Naval forces in the Pacific Fleet, and the SOCAL Range Complex is the most capable and heavily used Navy range complex in the eastern Pacific region. The Navy's Proposed Action is a step toward ensuring the continued vitality of this essential naval training and RDT&E resource.

This EIS/OEIS provides an assessment of environmental effects associated with current and proposed training and RDT&E activities, force structure (to include new weapons systems and platforms), and range investments in the Range Complex.

In summary, the Navy proposes to implement actions within the SOCAL Range Complex to:

- Increase training and RDT&E activities from current levels in order to support the Fleet Response Training Plan[2] (FRTP);
- Accommodate mission requirements associated with force structure changes and introduction of new weapons and systems to the Fleet; and
- Implement enhanced Range Complex capabilities.

To support an informed decision, the EIS/OEIS identifies objectives and criteria for naval activities in the SOCAL Range Complex. The core of the EIS/OEIS is the development and analysis of different alternatives for achieving the Navy's objectives. Alternatives development is a complex process, particularly in the dynamic context of military training and RDT&E. The touchstone for this process is a set of criteria that respond to the naval readiness mandate as it is implemented in the SOCAL Range Complex. The criteria for developing and analyzing alternatives to meet these objectives are set forth in Section ES 1.4.1. These criteria provide the basis for the statement of the Proposed Action and alternatives and selection of alternatives for further analysis, as well as analysis of the existing environment and the environmental effects of the Proposed Action and alternatives.

ES 1.3 SCOPE AND CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

In its analysis under NEPA, the Navy includes areas of the SOCAL Range Complex that lie within 12 nm (22 km), or within the U.S. territorial sea. Environmental effects in the areas that

[2] Predeployment training is governed by the FRTP. The FRTP establishes a training cycle that includes four phases: (1) maintenance; (2) unit-level training; (3) integrated training; and (4) sustainment.

are outside of the U.S. territorial sea are analyzed under EO 12114 and associated implementing regulations.

ES 1.3.1 National Environmental Policy Act

The first step in the NEPA process is the preparation of a notice of intent (NOI) to develop the EIS. The NOI is published in the Federal Register and provides an overview of the Proposed Action and the scope of the EIS.

Scoping is an early and open process for developing the "scope" of issues to be addressed in the EIS and for identifying significant issues related to a Proposed Action. The scoping process for the EIS is initiated by the publication of the NOI in the Federal Register and local newspapers. During scoping, the public helps define and prioritize issues and convey these issues through written comments. Comments received from the public as a result of the scoping process will be considered in the preparation of the EIS.

Subsequent to the scoping process, a Draft EIS/OEIS is prepared to assess the potential effects of the Proposed Action and alternatives on the environment. A notice of availability is published in the Federal Register and notices are placed in local or regional newspapers announcing the availability of the Draft EIS/OEIS. The Draft EIS/OEIS is circulated for review and comment. Public meetings are held to allow the public to provide comments on the Draft EIS/OEIS.

The Final EIS/OEIS responds to all public comments received on the Draft EIS/OEIS. Responses to public comments may include correction of data, clarifications of and modifications to analytical approaches, and inclusion of additional data or analyses.

Finally, the decision maker will issue a Record of Decision (ROD), usually 30 days after the Final EIS is made available to the public. The ROD will summarize the decision maker's decision and identify the selected alternative, describe the public involvement and agency decision-making processes, and present commitments to specific mitigation measures.

During the development of this EIS/OEIS, the Navy complied with all of the processes described here. See Section 10.1 for a summary of the Navy's compliance.

ES 1.3.2 Executive Order 12114

EO 12114 directs Federal agencies to provide for informed decision making for major Federal actions outside the U.S. territorial sea. For purposes of this EIS/OEIS, areas outside the U.S. territorial sea are considered to be areas beyond 12 nm (22 km) from shore. This EIS/OEIS satisfies the requirements of EO 12114, as analyses of operations or impacts occurring, or proposed to occur, outside of 12 nm (22 km) are provided.

For the majority of resource sections addressed in this EIS/OEIS, projected impacts outside of U.S. territory would be similar to those within the territorial sea. In addition, the baseline environment and associated impacts to the various resource areas analyzed in this EIS/OEIS are minimally different within or outside the 12 nm (22 km) jurisdictional boundary. Therefore, for these resource sections, the impact analyses contained in the main body of the EIS/OEIS is comprehensive and follow both NEPA and EO 12114 guidelines. The description of the affected environment addresses areas both within and beyond U.S. territorial sea.

ES 1.3.3 Other Environmental Requirements Considered

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

- Marine Mammal Protection Act
- Endangered Species Act
- Migratory Bird Treaty Act
- Coastal Zone Management Act
- Rivers and Harbors Act
- Magnuson-Stevens Fishery Conservation and Management Act
- Clean Air Act
- Federal Water Pollution Control Act (Clean Water Act)
- National Historic Preservation 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

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

ES 1.4 PROPOSED ACTION AND ALTERNATIVES

ES 1.4.1 Alternatives Development

NEPA-implementing regulations provide guidance on the consideration of alternatives in an EIS. These regulations require the decision maker to consider the environmental effects of the Proposed Action and a range of alternatives. The EIS must rigorously and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated (40 CFR § 1502.14). The purpose and need provides the framework in which reasonable alternatives to the Proposed Action are identified. In addition, the no action alternative must always be addressed. To be “reasonable,” an alternative must meet the stated purpose and need for the Proposed Action.

For the purposes of this EIS, the No Action Alternative serves as the baseline level of operations on the SOCAL Range Complex, representing the regular and historical level of training and testing activity necessary to maintain Navy readiness. Consequently, the No Action Alternative stands as no change from current levels of training and testing usage. This interpretation of the No Action Alternative is consistent with guidance provided by CEQ (40 Questions #3), which indicates that where ongoing programs continue, even as new plans are developed, "no action" is "no change" from current management direction or level of management intensity. The potential impacts of the current level of training and RDT&E activity on the SOCAL Range Complex (defined by the No Action Alternative) are compared to the potential impacts of activities proposed under Alternative 1 and Alternative 2.

The purpose of including a No Action Alternative in environmental impact analyses is to ensure that agencies compare the potential impacts of the proposed major Federal action to the known impacts of maintaining the status quo.

Alternatives considered in this EIS/OEIS were developed by the Navy after careful assessment by subject-matter experts, including military units and commands that utilize the ranges, range management professionals, and Navy environmental managers and scientists. The Navy has developed a set of criteria for use in assessing whether a possible alternative meets the purpose and need for the Proposed Action. Each of these criteria assumes implementation of mitigation measures for the protection of natural resources as appropriate. Any alternative considered in this analysis should support or employ:

1. All requirements of the FRTP and the Fleet Response Plan (FRP), including surge;
2. Achievement of training tempo requirements based on Fleet deployment schedules;
3. Advanced-level training that fully exercises naval capabilities in a training environment that replicates the dynamic nature of modern naval warfare;
4. Large-scale Joint training events;
5. Training requirements of formal military schools located at Navy and Marine Corps installations throughout the greater San Diego region;
6. Navy RDT&E activities;
7. Allied military training and RDT&E activities;
8. State-of-the-art training technologies for live-fire, instrumented, and force-on-force training, including instrumented range facilities in a shallow water environment for Anti-Submarine Warfare (ASW) and Mine Warfare (MIW) training for ships, aircraft, and submarines;
9. Alignment of the SOCAL Range Complex infrastructure with Naval force structure, including training with new weapons, systems, and platforms (vessels and aircraft) as they are introduced into the Fleet;
10. Enhancement and development of training resources and capabilities of SCI to provide realistic training opportunities for naval and Joint forces;
11. Use of existing range infrastructure, resources, and facilities to the maximum extent possible;
12. Use of sustainable range management practices that protect and conserve natural and cultural resources; and
13. Preservation of access to training areas for current and future training requirements, while addressing potential encroachments that threaten to impact range capabilities.

The Navy proposes to implement actions within the SOCAL Range Complex to:

- Increase training and RDT&E operations from current levels as necessary to support FRTP;
- Accommodate mission requirements associated with force structure changes and introduction of new weapons and systems to the Fleet; and
- Implement enhanced range complex capabilities.

The Proposed Action would result in selectively focused but critical and necessary increases in training, and range enhancements. These changes are required to ensure the SOCAL Range Complex supports Navy and Marine Corps training and readiness objectives.

Actions to support current, emerging, and future training and RDT&E in the SOCAL Range Complex, including implementation of range enhancements, will be evaluated in this EIS/OEIS. Alternative 1 and Alternative 2 actions include:

- Increasing numbers of training and RDT&E activities of the types currently being conducted in the SOCAL Range Complex.
- Expanding the size and scope of amphibious landing training operations in the SOCAL OPAREAs and at SCI to include a battalion-sized landing of 1,500+ Marines with weapons and equipment (to be conducted up to two times per year).
- Expanding the size and scope of Naval Special Warfare (NSW) training activities in Training Areas and Ranges (TARs), Special Warfare Training Areas (SWATs), and nearshore waters of SCI.
- Installing a Shallow Water Training Range (SWTR), a proposed extension into shallow water[3] of the existing instrumented deepwater ASW range (known as the Southern California ASW Range [SOAR]).
- Conducting operations on the SWTR following installation.
- Increasing Commercial Air Services support for Fleet Opposition Forces (OPFOR) and Electronic Warfare (EW) Threat Training.
- Constructing and operating a Shallow Water Minefield (SWM) (at depths of 250 to 420 feet [ft] [76 to 128 meters (m)]) in offshore and near-shore areas in the vicinity of SCI.
- Supporting training for new systems and platforms, specifically, Littoral Combat Ship (LCS), MV-22 Osprey aircraft, the EA-18G Growler aircraft, the MH-60R/S Seahawk Multimission Helicopter, the P-8 Poseidon Multimission Maritime Aircraft, the Landing Platform-Dock (LPD) 17 amphibious assault ship, the DDG 1000 (Zumwalt Class) destroyer, and an additional aircraft carrier (USS CARL VINSON) proposed to be homeported in San Diego.

ES 1.4.2 Alternatives Eliminated From Further Consideration

Having identified criteria for generating alternatives for consideration in this EIS/OEIS (see Section 2.2.1); the Navy eliminated several alternatives from further consideration after initial review. Specifically, the following potential alternatives (described in Sections 2.2.2.1-2.2.2.4) were not carried forward for analysis:

- Alternative range complex locations
- Reduced levels of training
- Temporal or geographic constraints on use of the SOCAL Range Complex
- Extensive reliance on simulated training in place of live training.

[3] In the context of naval operations, specifically submarine operations, the term "shallow water" is a relative term, denoting depths of up to 400 fathoms (2,400 ft), which are considered "shallow" compared to the depth of the ocean.

After careful consideration of each of these potential alternatives in light of the identified criteria, the Navy determined that none of them meets the Navy's purpose and need for the Proposed Action.

ES 1.4.3 Alternatives Considered

Three alternatives are analyzed in this EIS/OEIS:

1. The No Action Alternative: Current Operations
2. Alternative 1: Increase Operational Training and RDT&E and Accommodate Force Structure Changes
3. Alternative 2: Increase Operational Training and RDT&E, Accommodate Force Structure Changes, and Implement Range Enhancements. Alternative 2 is the preferred alternative.

As noted in Section 1.4, the purpose of the Proposed Action is to achieve, enhance, and maintain Fleet readiness using the SOCAL Range Complex to support current and future training and RDT&E activities. The Navy proposes to:

- Increase training and RDT&E activities from current levels as necessary to support FRTP;
- Accommodate mission requirements associated with force structure changes and introduction of new weapons and systems to the Fleet; and
- Implement enhanced range complex capabilities.

Each of the alternatives considered are discussed in the following sections.

ES 1.4.3.1 No Action Alternative: Current Training and RDT&E Activities within the SOCAL Range Complex

The Navy has been operating in the SOCAL Range Complex for over 70 years. Under the No Action Alternative, training operations, RDT&E activities, and major range events would continue at current levels. The SOCAL Range Complex would not accommodate an increase in activities required to execute all aspects of the FRTP or implement proposed force structure changes, nor would it implement investments identified as necessary by the Navy. Evaluation of the No Action Alternative in this EIS/OEIS provides a baseline for assessing environmental impacts of Alternative 1 and Alternative 2 (Preferred Alternative), as described in the following subsections.

Operations currently conducted on the SOCAL Range Complex are described in detail in Chapter 2 and Appendix A. Each military training activity described in this EIS/OEIS meets a requirement that can be ultimately traced to requirements from the National Command Authority (NCA). Training activities in the SOCAL Range Complex vary from basic individual or unit-level events of relatively short duration involving few participants to integrated major range training events, such as Joint Task Force Exercises (JTFEX), which may involve thousands of participants over several weeks.

Over the years, the tempo and types of operations have fluctuated within the SOCAL Range Complex due to changing requirements brought about by the dynamic nature of international events, the introduction of 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 operations as previously noted are fluid in nature, and will continue to cause fluctuations in training activities within the SOCAL

Range Complex. Accordingly, operational data used throughout this EIS/OEIS are a representative baseline for evaluating impacts that may result from the proposed training operations under the No Action Alternative.

With reference to criteria identified above and in Section 2.2.1, the No Action Alternative generally satisfies Fleet training requirements; however, because the No Action Alternative does not propose increases in operations it does not accommodate training associated with surge requirements of the FRTP. Another goal of the Proposed Action is to implement range enhancements for ASW and MIW training. The No Action Alternative does not satisfy this purpose, because it does not propose establishment of new range facilities that would accommodate the necessary enhancement of ASW and MIW training.

ES 1.4.3.2 Alternative 1: Increase Operational Training and RDT&E, and Accommodate Force Structure Changes

Alternative 1 is a proposal designed to meet Navy and Department of Defense (DoD) current and near-term operational training requirements. If Alternative 1 were to be selected, in addition to accommodating activities currently conducted, the SOCAL Range Complex would support an increase in training and RDT&E activities including major range events and force structure changes associated with introduction of new weapons systems, vessels, and aircraft into the Fleet. Under Alternative 1, baseline-training operations would be increased. In addition, training and operations associated with force structure changes would be implemented for the LCS, MV-22 Osprey, the EA-18G Growler, the MH-60R/S Seahawk Multimission Helicopter, the P-8 Poseidon Maritime Multimission Aircraft, the LPD 17 amphibious assault ship, and the DDG 1000 (Zumwalt Class) destroyer. Force structure changes associated with new weapons systems would include Mine Countermeasures (MCM) systems. Force structure changes also would include training associated with the proposed homeporting of the aircraft carrier USS CARL VINSON at Naval Base (NB) Coronado.[4]

While Alternative 1 would meet the Navy's purpose and need, Alternative 1 does not optimize the training capabilities of the Range Complex to the level needed. With reference to the criteria identified above, Alternative 1 only partially satisfies criteria 1, 2, 5, 6, and 7 (relating to support for the full spectrum of training requirements), because it does not fully accommodate surge training needs. Moreover, Alternative 1 does not support criteria 10 (relating to range enhancements for ASW and MIW training) because it does not propose establishment of new range facilities that would accommodate the necessary enhancement of ASW and MIW training.

ES 1.4.3.3 Alternative 2 (Preferred Alternative): Increase Operational Training and RDT&E, Accommodate Force Structure Changes, and Implement Range Enhancements

Implementation of Alternative 2 would include all activities of Alternative 1 (accommodating training operations currently conducted, increasing training and RDT&E activities [including major range events], and accommodating force structure changes). In addition, under Alternative 2:

[4] This EIS/OEIS addresses only training activities associated with the homeporting of a third aircraft carrier at NB Coronado; separate environmental analysis is being conducted with regard to potential impacts of facilities, personnel, and support activities that might be associated with the homeporting proposal.

- In order to optimize training throughput and meet the FRTP, training and RDT&E activities of the types currently conducted would be increased over levels identified in Alternative 1.
- Range enhancements would be implemented, to include an increase in Commercial Air Services, establishment of a SWM; and installation and use of the Shallow Water Training Range (SWTR).

Alternative 2 is the preferred alternative, because it would optimize the training and RDT&E capability of the SOCAL Range Complex. Alternative 2 fully meets the criteria identified above.

ES 1.5 ALTERNATIVES ANALYSIS

The affected environment and environmental consequences are described and analyzed according to categories of resources. The categories of resources addressed in this EIS/OEIS and the location of the respective analyses are identified in 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 (ROI), is defined. The discussion and analysis, organized by resource area, covers the SOCAL OPAREAs, SUA, and the land area of SCI to the extent affected resources or potential impacts are present.

Table ES-1: Categories of Resources Addressed, and EIS/OEIS Chapter 3 Analysis Guide

Geology and Soils (1.5.1)	Air Quality (1.5.2)
Hazardous Materials and Wastes (1.5.3)	Water Resources (1.5.4)
Acoustic Environment (1.5.5)	Marine Plants and Invertebrates (1.5.6)
Fish (1.5.7)	Sea Turtles (1.5.8)
Marine Mammals (1.5.9)	Sea Birds (1.5.10)
Terrestrial Biological Resources (1.5.11)	Cultural Resources (1.5.12)
Traffic (1.5.13)	Socioeconomics (1.5.14)
Environmental Justice and Protection of Children (1.5.15)	Public Safety (1.5.16)

In describing and analyzing affected resources and environmental consequences, this chapter identifies current mitigation measures that are integral to the activities covered by the Proposed Action and alternatives.

Analysis of potential impacts of Navy activities on marine mammals is particularly complex. Therefore, the Navy has prepared a detailed appendix (Appendix F) to this EIS/OEIS that provides a comprehensive discussion of the approach to and results of the impacts analysis relating to marine mammals. Section 3.9 summarizes Appendix F.

ES 1.5.1 Geology and Soils

This section addresses geologic formations, topography, and soils on San Clemente Island (SCI). Marine geology, bathymetry, and sediment quality are addressed under Section 1.5.4, Water Resources. Activities under each Alternative were analyzed for their effects on soils, particularly soil erosion and deposition of expended training materials.

A recent erosion study of SCI found that, on a watershed-wide basis, erosion rates were not, in general, substantially influenced by the current level of Navy activity (DoN 2006).

The increases in land training and testing activities proposed under Alternative 1 and 2 could incrementally increase rates of soil erosion in portions of those watersheds where training ranges or impact areas are located. In areas of heavy use for training, visible increases in soil disturbance and soil erosion may be observed over small areas.

Specific impacts to geology and soils and a summary of applicable mitigation are listed in Table ES-2.

Table ES-2: Summary of Geology and Soil Effects by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Only previously disturbed areas are affected. Cratering and erosion occur in Shore Bombardment Area (SHOBA); however, soil changes are minor and affect only portions of the area. • Some sandy beaches are disturbed; however, the impacts are temporary and do not affect sensitive resources. • Ongoing training on some TARs causes minor increases in surface disturbance, which increases erosion potential.	• All applicable operations are within the territorial limits of the U.S.; EO 12114 does not apply.
Alternative 1	• Proposed training activities would be comparable to existing activities, but the weight of expended training ordnance would increase by about 22 percent. The level of disturbance of surfaces would increase accordingly. • Surface disturbance over large areas for long periods, associated with the designation of the Assault Vehicle Maneuver Corridor (AVMC), would increase erosion potential that would be limited by site-specific mitigation measures and measures presented in the Integrated Natural Resources Management Plan (INRMP). • One battalion landing would disturb soils over a wider area than TARs; beach disturbance would be temporary, soil impacts would be minimal, and comparable to existing levels of activities. Vehicle use would be limited to designated areas.	• All applicable operations are within the territorial limits of the U.S.; EO 12114 does not apply.

Table ES-2: Summary of Geology and Soil Effects by Alternative (cont'd)

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
Alternative 2	• Proposed training activities would be comparable to existing activities, but the weight of expended training ordnance would increase by about 33 percent. The level of disturbance of surfaces would increase accordingly. • Surface disturbance over large areas for long periods, associated with the designation of the AVMC, would increase erosion potential that would be limited by site-specific mitigation measures and measures presented in the INRMP. • Two Battalion landings would disturb soils over a wider area than TARs; beach disturbance would be temporary, topographic changes would be minimal, and comparable to existing levels of activities. Vehicle use would be limited to designated areas.	• All applicable operations are within the territorial limits of the U.S.; EO 12114 does not apply.
Mitigation Measures	• DoN is studying sedimentation and erosion associated with watersheds on SCI. • The Erosion Control Plan identifies measures to reduce the impacts of erosion on SCI. • The INRMP identifies presents policies to reduce the impacts of erosion on SCI. • Biannual sweeps and range clearance after exercises.	• All applicable operations are within the territorial limits of the U.S.; EO 12114 does not apply.

ES 1.5.2 Air Quality

Air quality is determined with reference to ambient air concentrations of seven major pollutants determined by the USEPA to be of concern with respect to the health and welfare of the general public. These pollutants, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead.

As shown in Table ES-3, emissions associated with implementation of Alternatives 1 and 2 would result in increases in air emissions above baseline (No Action Alternative) conditions. Within U.S. Territory, emission increases are mainly associated with increased operations at the Naval Auxiliary Landing Field (NALF) at SCI, surface vessels, aircraft operations, and ordnance use. Outside U.S. Territory, emission increases are mainly associated with increased surface vessel operations, with additional contributions from aircraft operations. In conclusion, the reasonably foreseeable actions that could add incremental impacts to the past and present impacts to air quality are included in the analyses under the No Action Alternative, Alternative 1, and Alternative 2. All impacts that would result in increases in emissions of air pollutants are not anticipated to result in exceedances of the air quality standards as discussed below.

Table ES-3: Summary of Air Quality Effects by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• The No Action Alternative involves maintaining operations at the baseline levels. Emissions for the No Action Alternative reflect baseline levels that are currently occurring. There is no increase in emissions above the baseline within U.S. Territory under the No Action Alternative.	• The No Action Alternative involves maintaining operations at the baseline levels. Emissions for the No Action Alternative reflect baseline levels that are currently occurring. There is no increase in emissions above the baseline outside the U.S. Territory under the No Action Alternative.
Alternative 1	• Within U.S. Territory, emission increases are mainly associated with increased operations at the NALF, surface vessels, aircraft operations, and ordnance use. • Emission increases over baseline for Alternative 1 that could affect the San Diego Air Basin (SDAB) would be less than the screening thresholds of 100 tons (T) per year for all pollutants. Emission increases would therefore not be considered major and would not result in an adverse impact on the air quality. • Emission increases over baseline for both Alternatives 1 within 3 nm (5.6 km) of shore would be subject to the requirements of the General Conformity Rule. Emission increases for CO, oxides of sulfur (So_x), PM_{10}, and $PM_{2.5}$, and $PM_{2.5}$ precursors within 3 nm (5.6 km) of SCI would be less than the de minimis levels for these pollutants. Emission increases within 3 nm (5.6 km) of San Diego County would be below the de minimis levels for all pollutants. • Emission increases over baseline for NOx within 3 nm (5.6 km) of SCI for Alternative 1 are below the de minimis levels. The Proposed Action under Alternative 1 would therefore not be subject to a Conformity Determination under the General Conformity Rule. A Record of Non-Applicability has been prepared. Should the South Coast Air Basin (SCAB) be redesignated as an extreme non-attainment area for the 8-hour National Air Ambient Air Quality Standards (NAAQS) for O_3, emission increases over baseline for oxides of nitrogen (NO_x) would be above the de minimis levels but would be within the South Coast Air Quality Management District (SCAQMD) State Implementation Plan (SIP) emissions budget for the San Clemente Island Range Complex (SCIRC). The Proposed Action under Alternative 1 would therefore conform to the SIP under the General Conformity Rule.	• Outside U.S. Territory, emission increases are mainly associated with increased surface vessel operations, with additional contributions from aircraft operations. • Although Alternative 1 would result in increases in emissions of air pollutants over the No Action Alternative, all air impacts outside U.S. territorial waters would not be expected to result in an exceedance of an air quality standard. • Emission increases over baseline for Alternative 1 that could affect Mexico would be less than the screening threshold. Emission increases would therefore not be considered major and would not result in an adverse impact on the air quality.

Table ES-3: Summary of Air Quality Effects by Alternative (continued)

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
Alternative 2 (Preferred Alternative)	• Impacts would be the same as described under Alternative 1 plus the following: • Emissions associated with construction for the SWTR Enhancements would be less than the de minimis levels and would not substantially contribute to emissions during any single year. Emissions are temporary.	• Impacts would be the same as described under Alternative 1.
Mitigation Measures	• Equipment used by the Navy, including marine vessels, aircraft, ground vehicles, and other equipment, are properly maintained in accordance with applicable Navy and Marine Corps requirements. Operating equipment meets federal emission standards, where applicable.	

ES 1.5.3 Hazardous Materials and Wastes

Hazardous materials addressed in this EIS/OEIS are broadly defined as substances that could pose a hazard by virtue of their chemical or biological properties, in the event of a substantial public exposure (human health) or release (environment). The purpose of evaluating hazardous materials and hazardous wastes is to determine whether they pose a direct hazard to individuals or the environment, given the specified source concentrations, environmental pathways, environmental sinks, and whether fresh or marine surface waters, soils, or groundwater would be contaminated. The purpose of evaluating hazardous wastes, a regulated subcategory of hazardous materials, is to determine whether these materials are being stored and transported appropriately, and whether waste generation would exceed regional capacity of hazardous waste management facilities.

Expended training materials containing hazardous constituents that will be deposited in the SOCAL OPAREAs (i.e., ocean area) are addressed in Section 1.5.4, Water Resources. Hazardous materials used at SCI are discussed below.

The expended ordnance is likely to be concentrated at certain points on SCI, such as around fixed targets. Sediment transport processes will tend to move surface soils downslope over time; conveying metals and other insoluble constituents into nearby marine areas.

Explosives and propellants decompose gradually due to sunlight and bacterial activity, and their water-soluble degradation products migrate vertically and horizontally in the soil. Where Unexploded Ordnance (UXO) or low-order detonations result in large deposits of these materials, areas of greater concentration could result, but soil concentrations of these hazardous constituents are not expected to approach actionable levels as a result of residues from normal high-order detonations. Regular range clearances by Explosive Ordnance Disposal (EOD) personnel reduce the likelihood of high concentrations of contaminants developing on land ranges.

The anticipated amounts of hazardous wastes produced under the various alternatives are well within the capacity of the Navy's hazardous waste management system. The anticipated amounts also are well within the existing capacities of hazardous waste transporters and treatment and disposal facilities.

Specific impacts to hazardous materials and waste and a summary of applicable mitigation are listed in Table ES-4.

Table ES-4: Summary of Hazardous Materials and Waste Effects by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non U.S. Territorial Waters)
No Action Alternative	• SCI on-island use of munitions will deposit tens of thousands of pounds of training materials on the land ranges. Most of the degradation products of these materials are nonhazardous inorganic materials, however, hazardous constituents and metals from ordnance are deposited into soils including lead, nickel, chromium, and copper. • The Navy's existing hazardous waste management system is sufficient for handling of wastes generated.	• No effect from land activities. • The Navy's existing hazardous waste management system is sufficient for handling of wastes generated.
Alternative 1	• Impacts on SCI would be similar to those of the No Action Alternative. Overall volume of expended training materials would increase by about 50 percent. • The Navy's existing hazardous waste management system is sufficient for handling of wastes generated.	• No effect from land activities. • The Navy's existing hazardous waste management system is sufficient for handling of wastes generated.
Alternative 2	• Impacts on SCI would be similar to those of the No Action Alternative. Overall volume of expended training materials would increase by about 68 percent. • The Navy's existing hazardous waste management system is sufficient for handling of wastes generated.	• No effect from land activities. • The Navy's existing hazardous waste management system is sufficient for handling of wastes generated.
Mitigation Measures	• The Navy's general instructions (e.g., Chief of Naval Operations' Instructions [OPNAVINST] 5090.1C) and training activity planning and review processes serve to ensure that hazardous materials and hazardous wastes are stored and handled appropriately.	

ES 1.5.4 Water Resources

Water resources include water bodies, water processes and uses, and water quality. This section evaluates effects of the Proposed Action on marine water quality and surface and groundwaters on SCI.

ES 1.5.4.1 Water Quality

Training and testing activities will introduce several types of water pollutants to the water column. These substances include propellant and explosives residues and battery constituents from missiles and aerial targets; battery constituents from subsurface targets and sonobuoys; torpedo fuel, metals from rusting and corroding casings and accessory materials, and chaff and flare residues. Based on the qualitative and quantitative analyses of expended training materials presented in Section 3.4, Water Resources, of this EIS/OEIS, however, these pollutants will be released in quantities and at rates such that they will not violate any water quality standard or criteria. None of the alternatives will have an effect on the designated beneficial uses of marine waters.

Lead and other potentially hazardous materials from projectiles may leach into the soils on SCI over a long period; however, no groundwater resources are present on SCI and surface water is

not located within impact or firing areas, and runoff potential is minimal due to topography and existing conditions.

ES 1.5.4.2 Bottom Sediments

The deposition rate on the ocean bottom of expended training materials, by weight, is about 32 pounds (lb)/nm^2 (4.1 kilogram (kg)/km^2) per year for the No Action Alternative, 46 lb/nm^2 (6.1 kg/km^2) per year for Alternative 1, and 48 lb/nm^2 (6.3 kg/km^2) per year for Alternative 2. If the expended training materials remained in the top 2 in. (5 cm) of bottom sediments and were distributed evenly over the bottom area, then their concentration would be about 5 lb per million ft^3 (2.2 kg/million m^3) of sediment for the No Action Alternative and 8 lb per million ft^3 (119 kg per million m^3) of sediment for Alternatives 1 and 2. Depending on the density of bottom sediments, the concentration of expended training materials would be about 45 parts per billion (ppb), 69 ppb, and 70 ppb by weight for the No Action, Alternative 1, and Alternative 2 respectively. This concentration is several orders of magnitude below USEPA sediment quality guidelines for all alternatives.

Expended training materials will settle to the ocean bottom and will be covered by sediment deposition over time. Most of the expended training materials are primarily aluminum and steel, and thus harmless, but some of the materials are toxic metals such as lead. These items degrade and disperse very slowly, so the volume of expended training materials within the training areas, and the amounts of toxic substances being released to the environment, gradually increase over the period of military use. Concentrations of some substances in sediments surrounding the disposed items increase over time. Sediment transport via currents may eventually disperse these contaminants outside of the training areas. The density of expended training materials in ocean bottom sediments is not high enough to result in substantial sediment toxicity. Neither inert nor toxic substances at this density will measurably affect sediment quality.

Expended training materials will accumulate in ocean bottom sediments over the entire period of military training and testing, so a short-term analysis does not capture the magnitude of the environmental effects. If the same amounts of training materials were used annually for 20 years, the aggregate density of items on the ocean floor would still have no discernable effect on the quality of bottom sediments.

Specific impacts to water resources and a summary of applicable mitigation are listed in Table ES-5.

Table ES-5: Summary of Water Resource Effects by Alternative

Alternative	NEPA (On-Land and US. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Releases of munitions constituents from explosives, ordnance, and small arms rounds used during training exercises have no substantial impacts. • No long-term degradation of marine, surface, or ground water quality.	• Munitions constituents and other materials (batteries, fuel, and propellant) from training devices have minimal effect; are below USEPA sediment quality guidelines; or result in local, short-term impacts. • No long-term degradation of marine water quality.
Alternative 1	• Munitions constituents (explosives, ordnance, small arms rounds) from training devices and training exercises would have little effect or result in short-term impacts. • No long-term degradation of marine, surface, or ground water quality.	• Munitions constituents and materials (batteries, fuel, and propellant) from training devices would have minimal effect; would be below standards; or would result in local, short-term impacts. • No long-term degradation of marine water quality.
Alternative 2 (Preferred Alternative)	• Impacts to Alternative 2 would be substantially the same as Alternative 1.	• Impacts to Alternative 2 would be substantially the same as Alternative 1.
Mitigation Measures	• Navy ships are required to conduct activities at sea in a manner that minimizes or eliminates any adverse impacts on the marine environment. • Environmental compliance polices and procedures applicable to shipboard operations afloat are defined in OPNAVINST 5090.1C. DoD Instruction 5000.2-R, EO 12856, and EO 13101, and OPNAVINST 5090.1C also cover pollution prevention requirements. These instructions reinforce the Clean Water Act's (CWA's) prohibition against discharge of harmful quantities of hazardous substances into or upon U.S. waters out to 200 nm (371 km), and mandate stringent hazardous waste discharge, storage, dumping, and pollution prevention requirements. • With regard to reducing or avoiding water quality degradation from the expenditure of training materials, management practices include EOD sweeps to remove unexploded ordnance and ordnance remnants from land ranges. • Certain features of the training materials themselves are designed to reduce pollution, as required by Navy and DoD regulations.	• Navy ships are required to conduct activities at sea in a manner that minimizes or eliminates any adverse impacts on the marine environment. • Environmental compliance polices and procedures applicable to shipboard operations afloat are defined in OPNAVINST 5090.1C. DoD Instruction 5000.2-R, EO 12856, and EO 13101, and OPNAVINST 5090.1C also cover pollution prevention requirements. These instructions reinforce the CWA's prohibition against discharge of harmful quantities of hazardous substances into or upon U.S. waters out to 200 nm (371 km), and mandate stringent hazardous waste discharge, storage, dumping, and pollution prevention requirements.

ES 1.5.5 Acoustic Environment

The acoustic environment analyzed here includes only airborne noise. In-water sound, which includes sonar and its potential effect to marine resources, is discussed in Sections ES 1.5.7, 1.5.8, and 1.5.9. Airborne sound generated by the Proposed Action under the No Action Alternative, Alternative 1, or Alternative 2 would have no substantial environmental effects because:

- Noise from training and RDT&E activities in the SOCAL Range Complex would be dispersed and intermittent, so it would not contribute to long-term noise levels;
- Training and test areas on SCI are remote and isolated from the general public, so no nonparticipants would be exposed to these noise events;
- No new public areas would be exposed to noise from training and testing activities;
- Advanced notice to mariners is given when particularly hazardous activities are scheduled. Because these types of activities tend also to be the most significant noise-producing activities, this notice also reduces potential noise impacts to nonparticipants;
- Land-based ordnance detonations occur mostly in Shore Bombardment Area (SHOBA), a designated restricted area far removed from the general public, which has been used for live-fire activities since at least 1937; and
- The incremental increases in the numbers of range events would not considerably increase long-term average noise levels; hourly average equivalent noise levels are and would remain relatively low.

Table ES-6 summarizes noise effects and mitigation measures for the No Action, Alternative 1, and Alternative 2.

Table ES-6: Summary of Effects to the Acoustic Environment by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non U.S. Territorial Waters)
No Action Alternative	• Sound-generating events are intermittent, occur in remote or off-limit areas, and do not expose a substantial number of human receptors to high noise levels. No sensitive receptors are likely to be exposed to sound for such military activities.	• Sound-generating events are intermittent, occur in remote areas, and do not expose a substantial number of human receptors to high noise levels. No sensitive receptors are likely to be exposed to sound for such military activities.
Alternative 1	• Increases in training activities generally are not of a magnitude that would result in a perceptible increase in the ambient noise level. Therefore, impacts would be the same as under the No Action Alternative.	• Increases in training activities generally are not of a magnitude that would result in a perceptible increase in the ambient noise level. Therefore, impacts would be the same as under the No Action Alternative.
Alternative 2 (Preferred Alternative)	• Increases in training activities generally are not of a magnitude that would result in a perceptible increase in the ambient noise level. Therefore, impacts would be the same as under the No Action Alternative.	• Increases in training activities generally are not of a magnitude that would result in a perceptible increase in the ambient noise level. Therefore, impacts would be the same as under the No Action Alternative.
Mitigation Measures	• Advance notice of hazardous (and typically noise-producing) operations is made available to the public.	

ES 1.5.6 Marine Plants and Invertebrates

Potential impacts of training and RDT&E activities on marine plants and invertebrates would primarily be associated with the expenditure of ordnance and incidental release of other materials in exercises that would be conducted in Warning Area 291 (W-291) and all ocean OPAREAs of the SOCAL Range Complex. The resulting expended materials may affect the physical and chemical properties of benthic habitats and the quality of surrounding marine waters, in turn affecting populations of marine plants and invertebrates.

Sandy beaches are very dynamic habitats and are biologically less diverse than rocky intertidal areas. Localized impacts to benthic infauna along sandy beaches would be expected in some training and testing activities, although recolonization would also be expected relatively soon after the disturbance. Specifically, underwater demolitions and amphibious landings could cause temporary increased turbidity. However, organisms inhabiting sandy beach areas have adapted to surviving in a variable environment that is subject to regular wave disturbance and cycles of erosion and deposition.

Construction of a SWM and SWTR Extension would result in localized impacts to marine biological resources during installation; however, based on the project criteria, no sensitive habitat or species will be affected, and therefore, impacts would be minimal.

Two species of concern, the white abalone (Federally listed) and the black abalone (proposed for Federal listing) occur within the SOCAL Range Complex. With respect to species of concern, training and testing activities in the SOCAL OPAREAs may affect the white abalone and the black abalone. The Navy is consulting with the resource agencies to ensure there will be no significant impact to the species. A few of the activities, however, have the potential to affect the species because they occur in or immediately adjacent to abalone habitat and result in objects entering or being placed within that habitat. These include sonobuoy testing and use, chaff and flare fallout to the water, Naval Surface Fire Support (NSFS), Insertion/Extraction, and mine training exercises.

Specific impacts to marine plants and invertebrates and a summary of applicable mitigation are listed in Table ES-7.

Table ES-7: Summary of Effects to Marine Plants and Invertebrates by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Constituents from training devices (e.g., ordnance, batteries, small arms rounds) and training exercises have no effect or result in short-term, localized impacts. Potential loss of rocky intertidal habitat from NSFS may produce localized, short-term impacts. Disturbance of sandy bottom habitat and increased turbidity from amphibious landings and underwater demolition. No long-term changes to species abundance or diversity. No loss or degradation of sensitive habitats.	• Hazardous materials from training devices (e.g., ordnance, batteries, small arms rounds) and training exercises have no effect or result in short-term, localized impacts. No long-term changes to species abundance or diversity. No loss or degradation of sensitive habitats.
Alternative 1	• Impacts as described in the No Action Alternative plus the following: • Impacts to marine biological resources from major range events would be similar to those described for Anti-Air Warfare (AAW), Anti-Surface Warfare (ASUW), NSW, and Amphibious Warfare (AMW) operations and would be minimal. • New Platforms and Vehicles will have similar effects as the platforms that they are replacing, and will have minimal impacts to marine biological resources. • Small increases in the number of Offshore Operations, SHOBA Operations, Underwater Demolitions exercises, and RDT&E tests would result in minimal impacts to marine biological resources.	• Impacts as described in the No Action Alternative plus the following: • Impacts to marine biological resources from major range events would be similar to those described for AAW, ASUW, NSW, and AMW operations and would be minimal. • New Platforms and Vehicles will have similar effects as the platforms that they are replacing, and will have minimal impacts to marine biological resources. • Small increases in the number of Offshore Operations, SHOBA Operations, Underwater Demolitions exercises, and RDT&E tests would result in minimal impacts to marine biological resources.
Alternative 2 (Preferred Alternative)	• Impacts same as described for No Action Alternative and Alternative 1, plus the following: • Construction of a SWM and SWTR Extension would result in localized impacts to marine biological resources during installation; however, based on the project criteria, no sensitive habitat or species will be affected, and therefore, impacts would be minimal.	• Impacts same as described for No Action Alternative and Alternative 1, plus the following: • Construction of a SWM and SWTR Extension would result in localized impacts to marine biological resources during installation; however, based on the project criteria, no sensitive habitat or species will be affected, and therefore, impacts would be minimal.
Mitigation Measures	• Mitigation measures for underwater detonations, implemented for marine mammals and sea turtles, offer protections to other marine habitats and resources.	

ES 1.5.7 Fish

The analysis of effects on fish concerns direct physical injury, i.e., the potential for death, injury, or failure to reach (or an increase in the time needed to reach) the next developmental stage, and was used to evaluate potential effects on fish eggs, larvae, and adult fish. Data are available to enable some predictions about the likelihood and extent of these kinds of effects.

Essential Fish Habitat (EFH) is located within the region of influence and consists of three management units: (1) Coastal Pelagic, (2) Groundfish, and (3) Highly Migratory. There are Fishery Conservation Management Plans that identify and describe each EFH. For the purpose of this analysis, potential effects were considered to determine adverse impacts to EFH. Based on the limited extent, duration, and magnitude of potential impacts from SOCAL Range Complex training and testing, the adverse effects would be minimal and temporary. Further, mitigation measures for the action would adequately avoid, minimize, mitigate, or otherwise offset the adverse impacts to EFH and Managed Species. See Appendix E for full EFH Assessment.

Common activities were analyzed to determine the effect on fish. Both acoustic (i.e., aircraft, missile, and target overflight; muzzle blast; underwater explosions; shock waves; and sonar) and nonacoustic (i.e., munitions constituents, falling debris, small arms rounds, and chaff and flares) sources showed minimal impacts to fish. Specifically associated with the Preferred Alternative (Alternative 2), potential impacts were analyzed for the installation of a shallow water minefield and a shallow water training range. All impacts were determined to be minimal and of a temporary nature.

Specific impacts to fish and a summary of applicable mitigation are listed in Table ES-8.

Table ES-8: Summary of Effects to Fish by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Relatively small numbers of fish would be killed by shock waves from the water impact of inert mines, inert bombs, and intact missiles and targets. These and several other types of activities common to many exercises or tests have minimal effects on fish: aircraft, missile, and target overflights; muzzle blast from 5-in. naval guns, release of munitions constituents; falling debris and small arms rounds; entanglement in military-related debris; and chaff and flares. • Because only a few species of fish may be able to hear the relatively higher frequencies of mid-frequency active sonar, effects of sonar used in the ASW and MIW exercises on fish are minimal. • Most SHOBA Operations and AMW outside of SHOBA either have no potential effects on fish or only have potential effects similar to aircraft overflights. • Most NSW operations take place on land or only have potential effects from aircraft overflights; so there are no potential effects on fish. Underwater demolitions exercises in Northwest Harbor will result in fish kills, but the area affected is relatively small and affects nearshore fish populations of SCI. • The only Space and Naval Warfare Systems Center (SSC) test that has any potential effects is Underwater Acoustics Testing, which involves mid-frequency active sonar, but effects on fish are minimal (see effects of sonar used in the ASW and MIW exercises, above).	• Relatively small numbers of fish would be killed by shock waves from the water impact of inert mines, inert bombs, and intact missiles and targets. These and several other types of activities common to many exercises or tests have minimal effects on fish: aircraft, missile, and target overflights; muzzle blast from 5-in. naval guns, release of munitions constituents; falling debris and small arms rounds; entanglement in military-related debris; and chaff and flares. • Because only a few species of fish may be able to hear the relatively higher frequencies of mid-frequency active sonar, effects of sonar used in the ASW and MIW exercises on fish are minimal.

Table ES-8: Summary of Effects to Fish by Alternative (continued)

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
Alternative 1	• Impacts as described in the No Action Alternative plus the following: • New Platforms and Vehicles will have similar effects as the platforms that they are replacing, and will have minimal impacts to fish. • Small increases in the number of Offshore Operations, SHOBA Operations, Underwater Demolitions exercises, and RDT&E tests would result in minimal impacts to fish.	• Impacts as described in the No Action Alternative plus the following: • Impacts to fish from Major Range Events would be similar to those described for AAW, ASUW, NSW, and AMW operations and would be minimal. • Small increases in the number of Offshore Operations would result in minimal impacts to fish.
Alternative 2 (Preferred Alternative)	• Impacts same as described for No Action Alternative and Alternative 1, plus the following: • Construction of a SWM and SWTR Extension would result in localized impacts to fish during installation; however, based on the project criteria, no sensitive habitat or species will be affected, and therefore, impacts to fish would be minimal.	• Impacts same as described for No Action Alternative and Alternative 1, plus the following: • Construction of a SWM and SWTR Extension would result in localized impacts to fish; however, based on the project criteria, no sensitive habitat or species will be affected, and therefore, impacts to fish would be minimal.
Mitigation Measures	• Mitigation measures implemented for marine mammals and sea turtles, also offer protections to habitats associated with fish communities. For example, explosive gunnery rounds and bombs are targeted so as to avoid floating weeds, kelp, and algal mats. No additional mitigation measures are proposed or warranted because no substantial effects on fish or fish habitat were identified.	

ES 1.5.8 Sea Turtles

There are four species of sea turtles that occur off the coast of California (loggerhead [*Caretta caretta*], eastern Pacific green [*Chelonia agassizi*], olive ridley [*Lepidochelys olivacea*], and leatherback [*Dermochelys coriacea*]), all are currently listed as either endangered or threatened under the Endangered Species Act (ESA). None of the four species is known to nest on Southern California beaches. The occurrence of these four species of sea turtles is highly seasonable and variable by location within the SOCAL Range Complex. Their occurrence and the Navy's activities in SOCAL result in a low probability that a direct or indirect effect would occur in relation to these species. It is nevertheless possible, if unlikely, that Navy activities in the SOCAL Range Complex may affect listed loggerhead, green, olive ridley, or leatherback sea turtles.

Specific impacts to sea turtles and a summary of applicable mitigation are listed in Table ES-9.

Table ES-9: Summary of Effects to Sea Turtles by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Active sonar will have limited effect on sea turtles due to hearing capabilities. • Underwater detonations associated with the SOCAL OPAREAs activities could affect sea turtles but it is unlikely due to their rarity in the SOCAL OPAREAs and implementation of mitigation measures. • Ship collisions are unlikely due to the rarity of sea turtles in the SOCAL OPAREAs and implementation of mitigation measures. • Other sources of impacts, such as entanglement or falling debris, are unlikely to affect sea turtles because of the sparse distribution of sea turtles.	• Effects are expected to be the same as U.S. Territorial Waters.
Alternative 1	• Effects generally are the same as described for the No Action Alternative.	• Effects generally are the same as described for the No Action Alternative.
Alternative 2 (Preferred Alternative)	• Effects generally are the same as described for the No Action Alternative. • SWTR cable placement and SWM mooring highly unlikely to affect sea turtles due to the slow speed of cable-laying ships and the rigidity of the cable.	• Effects generally are the same as described for the No Action Alternative.
Mitigation Measures	• Mitigation measures are in place for active sonar, general maritime procedures, and underwater detonation.	

ES 1.5.9 Marine Mammals

Impacts to marine mammals from Navy activities in the SOCAL Range Complex may result from nonacoustic sources, acoustic sources such as Mid- and High- Frequency Active sonar (MFA sonar/HFA sonar), or effects from underwater detonations. Modeled acoustic effects of Navy activities on marine mammals, as identified in this section, do not account for reductions in potential impacts through application of the extensive mitigation measures applied by the Navy.

ES 1.5.9.1 Potential Nonacoustic Impacts

Impacts to marine mammals from Navy activities in the SOCAL Range Complex may result from nonacoustic sources including ship collisions, entanglement, or falling debris. Although ship strikes with marine mammals have been increasing since the 1950s, Navy ship strikes remain extremely low, likely due to the low number of Navy ships relative to commercial ships, and Navy standard operating procedures such as use of lookouts and ability to maneuver to avoid sighted marine mammals. While marine mammals are susceptible to entanglement and subsequent injury or death, most documented cases of entanglement involve whale encounters with vertical lines of fixed fishing gear. Entanglement in military-related expended items has not been cited as a source of injury or mortality for marine mammals. Due to the low probability of direct strike by any Navy falling debris (from activities such as ASW or missile firings), there would be no impact to marine mammals resulting from direct impact of these expended training materials.

ES 1.5.9.2 Potential Mid- and High-Frequency Active Sonar Effects

No Action Alternative—Acoustic modeling provides an estimate of 99,809 annual exposures to mid- and high-frequency active sonar that could result in a behavioral change (Level B harassment). 9,658 exposures could result in temporary threshold shift (TTS) (auditory) (Level B harassment), and 19 annual exposures could result in injury as permanent threshold shift (PTS) (auditory). The modeled sonar exposure numbers by species are presented in Table 3.9-12. These exposure modeling results are estimates of marine mammal sonar exposures without consideration of standard mitigation and monitoring procedures.

Alternative 1—Acoustic modeling provides an estimate of 106,179 annual exposures to mid- and high-frequency active sonar that could result in a behavioral change. 10,265 exposures could result in TTS (Level B harassment), and 19 annual exposures could result in injury as PTS (Level A).

Alternative 2—Acoustic modeling provides an estimate of 112,884 annual exposures to mid- and high-frequency active sonar that could result in a behavioral change. 10,897 exposures could result in TTS (Level B harassment), and 19 annual exposures could result in injury as PTS (Level A).

ES 1.5.9.3 Potential Underwater Detonation Effects

No Action Alternative—Modeling estimates 1,220 annual exposures to pressure from underwater detonations could result in a behavioral change (Level B harassment), and 893 exposures could result in TTS (Level B harassment). Twenty-eight annual exposures could result in slight injury. Eight annual exposures could result in severe injury or mortality.

Alternative 1— Modeling estimates 1,240 annual exposures to pressure from underwater detonations could result in a behavioral change (Level B harassment), and 1,008 exposures could result in TTS (Level B harassment). Thirty annual exposures could result in slight injury. Ten annual exposures could result in severe injury or mortality.

Alternative 2— Modeling estimates 1,499 annual exposures to pressure from underwater detonations could result in a behavioral change (Level B harassment), and 1,128 exposures could result in TTS (Level B harassment). Thirty-four annual exposures could result in slight injury. Eleven annual exposures could result in severe injury or mortality.

Specific impacts to marine mammals and a summary of applicable mitigation are listed in Table ES-10.

Table ES-10: Summary of Effects to Marine Mammals by Alternative

Alternative	NEPA and EO 12114 (On-Land and U.S. and Non-U.S. Territorial Waters)
No Action Alternative	• **Nonacoustic effects.** No impacts to marine mammals are expected due to nonacoustic activities. • **Potential MFA sonar/HFA sonar effects**. The risk function methodology estimates 99,809 annual exposures to mid- and high-frequency active sonar that could result in a behavioral harassment (Level B harassment), 9,658 exposures that could result in TTS (Level B harassment), and 19 annual exposures that could result in injury as PTS. These exposure modeling results are estimates of marine mammal sonar exposures without consideration of standard mitigation and monitoring procedures. Population level adverse effects are not anticipated. • **Potential underwater detonation effects**. Modeling estimates 1,220 annual exposures to pressure from underwater detonations that could result in sub-TTS (Level B harassment) and 893 annual exposures that could result in TTS (Level B harassment). Twenty-eight annual exposures could result in slight injury. Eight annual exposures could result in severe injury or mortality.
Alternative 1	• **Nonacoustic effects.** No impacts to marine mammals are expected due to nonacoustic activities. • **Potential MFA sonar/HFA sonar effects**. The risk function methodology estimates 106,179 annual exposures to mid- and high-frequency active sonar that could result in a behavioral harassment, 10,265 exposures that could result in TTS (Level B harassment), and 19 annual exposures that could result in injury as PTS. Population level adverse effects are not anticipated. • **Potential underwater detonation effects**. Modeling estimates 1,240 annual exposures to pressure from underwater detonations that could result in sub-TTS (Level B harassment) and 1,008 annual exposures that could result in TTS (Level B harassment). Thirty annual exposures could result in slight injury. Ten annual exposures could result in severe injury or mortality.
Alternative 2 (Preferred Alternative)	• **Nonacoustic effects.** No impacts to marine mammals are expected due to nonacoustic activities. • **Potential MFA sonar/HFA sonar effects**. The risk function methodology estimates 112,884 annual exposures to mid- and high-frequency active sonar that could result in a behavioral harassment, 10,897 exposures that could result in TTS (Level B harassment), and 19 exposures that could result in injury as PTS. Population level adverse effects are not anticipated. • **Potential underwater detonation effects**. Modeling estimates 1,499 annual exposures to pressure from underwater detonations could result in sub-TTS (Level B harassment) and 1,128 annual exposures could result in TTS (Level B harassment). Thirty-four annual exposures could result in slight injury. Eleven annual exposures could result in severe injury or mortality.
Mitigation	• Extensive mitigation measures include personnel training, use of trained lookouts, use of safe speeds by Navy ships, marine mammal avoidance procedures, and numerous measures for specific training activities.

ES 1.5.10 Sea Birds

The SOCAL Range Complex encompasses an important area for foraging and breeding sea birds. Resident sea bird populations depend on coastal islands relatively free from human disturbance and close to important foraging grounds. Additionally, migratory sea birds utilize the productive offshore waters associated with the California Current to forage during wintering and migratory movements. Although the importance of the Southern California Bight (SCB) waters and Channel Islands is well described, current specific locations of bird species (aside from some island nesting populations), population estimates, and the effect of spatially diffuse military training and testing activities on these values is not well known.

Threatened and endangered species within the SOCAL Range Complex include: the short-tailed albatross (*Phoebastria albatrus*); marbled murrelet (*Brachyramphus marmoratus);* Xantus's murrelet *(Synthliboramphus hypoleucus)*; Californian brown pelican *(Pelecanus occidentalis californicus)*; and the California least tern *(Sterna antillarum browni)*.

While it is possible that military activities that come within close proximity to shore, such as on San Clemente Island, could have an adverse impact on nesting and nearshore foraging species, the analysis in this document indicates that the spatial extent of the activity is so small and the surrounding available habitat so wide that sea bird species have ample opportunity to move to adjacent quality habitat, thereby lessening effects. Breeding sea birds have high nesting fidelity and most require some degree of isolation from disturbance and predation to maintain viable breeding success. Since none of the alternatives propose any new or expanded land-based impact areas for air-to-surface and surface-to-surface ordnance or an increase in coastal flight paths near currently documented roosting and breeding sea bird colonies, there would be no increase in the direct or indirect effects on sea bird populations. Based on the analysis of the spatial area available, the limited available data on sea bird populations, professional opinions of subject matter experts who study sea birds in Southern California, and discussions with military operational professionals, it is likely that effects to protected and migratory sea birds would be minimal. The sheer size of the Range Complex, as well as the temporal and spatial variability of operations superimposed on temporal and seasonal distributions of sea bird species, poses a minimal potential effect on sea bird populations.

Specific impacts to sea birds and a summary of applicable mitigation are listed in Table ES-11.

Table ES-11: Summary of Effects to Sea Birds by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Training activities would have temporary and spatially distinct short-term impacts. • No long-term affects are apparent.	• Training activities would have temporary and spatially distinct short-term impacts. • In addition, effects would be lower in Non-U.S. Territorial Waters because they are farther from sea bird nesting and breeding locations. • No long-term affects are apparent.
Alternative 1	• Impacts generally the same as No Action Alternative.	• Impacts generally the same as No Action Alternative.
Alternative 2 (Preferred Alternative)	• Impacts generally the same as No Action Alternative.	• Impacts generally the same as No Action Alternative.
Mitigation Measures	• Operators will ensure that the California brown pelican is not in proximity to the overblast pressure prior to underwater demolition activities.	

ES 1.5.11 Terrestrial Biological Resources

The only land area[5] within the SOCAL Range Complex is SCI, so the terrestrial analysis is limited to the activities and species occurring there. SCI supports 5 federally listed terrestrial

[5] Although San Nicolas, Santa Barbara and Santa Catalina Islands are within the SOCAL Range Complex boundary, there are no activities on these islands associated with the Range Complex. Only ASW activities in the ocean surrounding these islands are analyzed in this EIS/OEIS.

animal species and 6 federally listed plant species, as well as about 30 additional plant species that are recognized as sensitive and are found only on SCI, or on SCI and one or more of the other California Channel Islands. Navy actions to remove nonnative grazing animals (successfully completed in the early 1990s), as well as a variety of additional monitoring and management activities directed by the Navy have resulted in recovery of habitat quality over much of the island and resulted in increases in the populations of many of the listed plant and wildlife species, most notably the San Clemente loggerhead shrike. Other threatened or endangered species analyzed include the San Clemente sage sparrow, island night lizard, California brown pelican, western snowy plover, island fox, and Santa Cruz Island rock-cress

Many of the more than 40 operations evaluated would occur in the same geographical locations on SCI, and some would take place simultaneously at different locations. This section takes a resource-by-resource approach and addresses the overall effects on vegetation and wildlife habitat, state and Federally listed rare, threatened, or endangered plant and wildlife species, and other sensitive plant species (focusing on plants considered by the California Native Plant Society as Rare and Endangered in California and Elsewhere). The analysis in Section 3.11.11 focuses on resources and operations areas so that the effects of different operations happening at the same place are taken into account.

For the Federally listed endangered and threatened plants and wildlife discussed in this analysis, the Navy has prepared a separate Biological Assessment addressing effects of no action and Proposed Action on SCI and is consulting with U.S. Fish and Wildlife Service (USFWS) in compliance with Section 7 of the Endangered Species Act.

Specific impacts to terrestrial biological resources and a summary of applicable mitigation are listed in Table ES-12.

Table ES-12: Summary of Effects to Terrestrial Biological Resources by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Impacts are generally minimal and are associated with access, fire, ordnance use and noise, and foot and vehicle traffic, especially where activities are concentrated. • Localized adverse effects on vegetation and habitat were predicted to result from continuation of activities at TAR 4 and TAR 21. • Ongoing Navy natural resources management activities are generally maintaining the island's biological resources, including endangered and threatened species, in a stable or increasing trend, balancing localized effects of the ongoing military uses.	• Effects on birds, including the California brown pelican, resulting from training and testing activities conducted offshore in non-U.S. Territorial Waters would be less than significant due to the temporary and localized nature of these activities, the very low average density of birds offshore, and the mobility of birds enabling them to depart from areas where naval activity is taking place. The likelihood of adverse effects to endangered or threatened bird species, including the California brown pelican, is so remote as to be discountable for the reasons given above.

Table ES-12: Summary of Effects to Terrestrial Biological Resources by Alternative (continued)

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
Alternative 1	• Compared to No Action, there would be increased frequency of most operations, increased ordnance use, and new established training areas associated with Alternative 1. • Impacts on biological resources would be principally associated with establishment and use of the Assault Vehicle Maneuver Areas (AVMAs), Artillery Maneuver Points (AMPs), and Artillery Firing Points (AFPs) by tanks, amphibious tracked vehicles, trucks, and artillery; as well as increased tempo of operations and ordnance use, including increased frequency of amphibious landings and raids, insertions and extractions, introduction of the U.S. Marine Corps (USMC) battalion-sized landing, and intensified activities of platoon-sized NSW groups at existing and newly established TARs.	• Impacts generally the same as No Action Alternative.
Alternative 2 (Preferred Alternative)	• Under the Preferred Alternative, AVMAs, AMPs, AFPs, and new TARs would be established and used as described above for Alternative 1. • Impacts on biological resources would be principally associated with establishment and use of the AVMAs, AMPs, and AFPs by tanks, amphibious tracked vehicles, trucks, and artillery; as well as increased tempo of operations and ordnance use, including increased frequency of amphibious landings and raids, insertions and extractions, introduction of the USMC battalion-sized landing, and intensified activities of platoon-sized NSW groups at existing and newly established TARs.	• Impacts generally the same as No Action Alternative.
Mitigation Measures	• The Navy has proposed 31 specific measures to avoid, minimize, or compensate for adverse impacts on biological resources including threatened, endangered, and sensitive species and their habitats. The measures include measures to control invasive nonnative plant and animal species that adversely affect sensitive plant and endangered wildlife species; surveys and monitoring of vegetation, sensitive plant, and wildlife species in operations in the AVMA,s AMPs, and AFPs; developing and implementing an erosion control plan for AVMAs, AMPs, and AFPs, confining vehicle traffic to authorized maneuver areas and roads; measures to minimize transport of plant matter or soil that may contain invasive species to SCI on vehicles and personnel; measures to minimize vehicle caused mortality to wildlife including island foxes, and measures to minimize the effects of vehicles egressing from amphibious landing areas at West Cove and Horse Beach Cove. Species-specific measures are also proposed to foster conservation of and minimize impacts to endangered or threatened species including San Clemente sage sparrow, San Clemente loggerhead shrike, island night lizard, California brown pelican, western snowy plover, island fox, and Santa Cruz Island rock-cress.	

ES 1.5.12 Cultural Resources

Cultural resources in the SOCAL Range Complex could occur within the waters of the SOCAL OPAREAs or on land at SCI. No traditional cultural resources or prehistoric resources are known to exist within the SOCAL OPAREAs. Submerged cultural resources, such as shipwrecks, are not expected to be affected by military training and RDT&E activities.

Cultural resources on SCI include archeological resources and historic architectural resources. Current and proposed training and testing would have no effect on cultural resources on most areas of SCI. Live-fire activities in those portions of SHOBA able to be assessed for cultural resources and AVMA activities near 32 archaeological sites within the undisturbed portions of the Old Airfield VC-3 operations area would require consultation and resolution of adverse effects under the National Historic Preservation Act (NHPA) prior to implementation of operations.

Specific impacts to cultural resources and a summary of applicable mitigation are listed in Table ES-13.

Table ES-13: Summary of Effects to Cultural Resources by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
No Action Alternative	• The Navy is preparing an Integrated Cultural Resources Management Plan (ICRMP) and a Programmatic Agreement (PA) to comply with Section 106 of the NHPA. • Terrestrial archaeological sites are not substantially affected by current training activities. • Buildings and structures are not substantially affected by current training activities. • Compliance with existing SCI cultural resources avoidance conditions substantially reduces effects. • Ground-disturbing activities in areas with cultural resources require additional mitigation measures. • Impacts on submerged cultural resources do not occur due to the type of training activities and the low density of submerged cultural resources.	• Impacts on cultural resources do not occur due to the type of training activities and the low density of submerged cultural resources.
Alternative 1	• Effects generally are the same as described for the No Action Alternative. An increased tempo of events, Battalion-sized Amphibious Landings, Off-Road Vehicle Areas, and TARs would not substantially affect SCI cultural resources because avoidance conditions and stipulations are followed. Sites that cannot be avoided are addressed through additional mitigation measures. • Impacts on submerged cultural resources would be the same as under the No Action Alternative.	• Submerged cultural resources would not be impacted because of the type of training activities and the low density of submerged cultural resources within the area of effect.

Table ES-13: Summary of Effects to Cultural Resources by Alternative (continued)

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
Alternative 2 (Preferred Alternative)	• Effects generally are the same as described for the No Action Alternative. An increased tempo of events, Battalion-sized Amphibious Landings, Off-Road Vehicle Areas, and TARs would not substantially affect SCI cultural resources because avoidance conditions and stipulations are followed. Sites that cannot be avoided are addressed through additional mitigation measures. • Impacts on submerged cultural resources would be the same as under the No Action Alternative.	• Submerged cultural resources would not be impacted because of the type of training activities and the low density of submerged cultural resources within the area of effect.
Mitigation	• No mitigation measures for submerged cultural resources are necessary or appropriate. • To reduce adverse effects on archaeological sites, detonations are restricted to designated areas. Officers in Charge of the Exercise will be aware of these restricted areas and plan training activities accordingly. • Site protection signs will be used to facilitate avoidance of the 32 archaeological sites within the undisturbed portions of the Old Airfield VC-3 operations area and sites outside of the Impact Areas at TARs 20, 21, and 22. Officers in Charge of the Exercise will be aware of these restricted areas and plan training activities accordingly. • Ordnance disposal training at VC-3 will occur in designated areas without cultural resources. • Ground-disturbing activities such as target placement will be directed away from cultural sites through site protection signs. • Under the Draft PA, once a currently unidentified site is determined to be eligible for the NRHP, State Historic Preservation Officer (SHPO) will be consulted to resolve potential adverse effects and identify appropriate treatments stipulated to address identified, unavoidable adverse effects.	• No mitigation measures for submerged cultural resources are necessary or appropriate.

ES 1.5.13 Traffic

SCI is a military-owned island with no connection to a road network in a regional context. Because only military and military authorized vehicle traffic takes place on SCI, this section addresses only air traffic and marine traffic in and in the vicinity of the SOCAL Range Complex.

Both military and nonmilitary entities have been sharing the use of the airspace and ocean surface comprising the SOCAL Range Complex for more than 50 years. Military, commercial, and general aviation activities have established an operational coexistence consistent with Federal, state, and local plans and policies and compatible with each interest's varying objectives. No adverse effects to traffic are expected for any of the alternatives.

Specific impacts to traffic and a summary of applicable mitigation are listed in Table ES-14.

Table ES-14: Summary of Effects to Traffic by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO 12114 (Non-U.S. Territorial Waters)
No Action Alternative	• The FAA has established W-289, W-290, and W-291 as special use airspace for military operations that are not compatible with civilian activity. • Hazardous air operations are communicated to commercial airlines and general aviation by Notices to Airmen (NOTAMs), published by the Federal Aviation Administration (FAA). There are no additional impacts on the FAA's capabilities, no expected decrease in aviation safety, and no adverse effect on commercial or general aviation activities. • Military use of the offshore ocean is also compatible with civilian use. Where naval vessels are conducting operations that are not compatible with other uses, such as weapons firing, they are confined to operating areas away from shipping lanes and other recreational use areas. • Hazardous marine operations are communicated to all vessels and operators by Notices to Mariners (NOTMARs), published by the Coast Guard.	• The FAA has established W-289, W-290, and W-291 as special use airspace for military operations that are not compatible with civilian activity. • Hazardous air operations are communicated to commercial airlines and general aviation by NOTAMs, published by the FAA. There are no additional impacts on the FAA's capabilities, no expected decrease in aviation safety, and no adverse effect on commercial or general aviation activities. • Military use of the offshore ocean is also compatible with civilian use. Where naval vessels are conducting operations that are not compatible with other uses, such as weapons firing, they are confined to operating areas away from shipping lanes and other recreational areas. • Hazardous marine operations are communicated to all vessels and operators by NOTMARs, published by the Coast Guard.
Alternative 1	• Impacts on traffic under Alternative 1 would be the same as the No Action Alternative.	• Impacts on traffic under Alternative 1 would be the same as the No Action Alternative.
Alternative 2 (Preferred Alternative)	• Impacts on traffic under Alternative 2 would be the same as the No Action Alternative.	• Impacts on traffic under Alternative 2 would be the same as the No Action Alternative.
Mitigation Measures	• NOTAMs and NOTMARs are published with the appropriate agencies. • Return of SUA to civilian FAA control when not in use for military activities.	

ES 1.5.14 Socioeconomics

This section addresses the socioeconomics effects on commercial and recreational fishing, commercial shipping, tourism, housing, and the economy, as well as diving, boating, and surfing.

Temporary range clearance procedures for safety purposes do not adversely affect these economic activities because displacement is of short duration. The Navy has performed military operations within this region in the past and has only temporarily limited fishing or recreational uses in the SOCAL OPAREAs. When range clearance is required it is posted on the SCI website (www.scisland.org), and the public is notified via a NOTMAR. These measures provide mariners advance notification of Navy use areas, which allow non-participants to select an alternate destination without appreciable affect to their activities. For example, commercial fishermen will know in advance about potential closures in a specific area. This notification will prevent them from wasting their time and fuel transiting to a closed location and they can plan for an alternate location instead. Upon completion of training, the range would be reopened and fishermen would be able to return to fish in the previously closed area. To help manage competing demands and

maintain public access in the SOCAL OPAREAs, the Navy conducts its offshore operations in a manner that minimizes restrictions to commercial fisherman.

Specific impacts to socioeconomic concerns and a summary of applicable mitigation are listed in Table ES-15.

Table ES-15: Summary of Effects to Socioeconomics by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Only military and government employee populations are found at SCI; socioeconomic effects would not have any impact on population centers. • Activities would have no impact on jobs, housing, infrastructure, recreation, or commercial needs at SCI. • No adverse socioeconomic impacts would occur as a result of continuing present operations.	• No adverse socioeconomic impacts would occur as a result of the No Action Alternative.
Alternative 1	• Effects are generally the same as the No Action Alternative, except activities may temporarily impact recreational and/or commercial users; however, notices will be posted and alternative locations will be available, which limits long-term effects.	• Effects generally are the same as described for the No Action Alternative.
Alternative 2 (Preferred Alternative)	• Effects generally the same as described for Alternative 1 with the addition of possible commercial fishing gear entanglement as a result of the SWTR installation.	• Effects generally are the same as described for the No Action Alternative. • No adverse socioeconomic impacts would occur as a result of implementation.
Mitigation Measures	• NOTAMs and NOTMARs are published with the appropriate agencies. • SWTR installation will include protective covers in areas where commercial fishing is present. Types of commercial fishing gear used in the SOCAL Range Complex include: drift gillnets, longline gear, troll gear, trawls, seining, and traps or pots. Damage to fishing gear from entanglement with hydrophones is rare.	

ES 1.5.15 Environmental Justice and Protection of Children

The SOCAL OPAREAs are at-sea. Environmental justice and protection of children is only of concern on SCI; however, the only residents on SCI are temporary military and contractor personnel. The small number of potentially affected individuals, their temporary residential status, and their direct or indirect employment by the Federal government make it unlikely they would be considered low-income or otherwise disproportionately susceptible to adverse socioeconomic or environmental impacts.

Specific impacts to environmental justice and the protection of children are listed in Table ES-16.

Table ES-16: Summary of Effects to Environmental Justice and Protection of Children by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
No Action Alternative	**Environmental Justice** • The only residents on SCI are temporary military and contractor personnel. Their direct or indirect employment by the Federal government makes it unlikely they would be considered low-income or otherwise disproportionately susceptible to adverse socioeconomic or environmental impacts. Therefore, there would be little or no harmful effect. **Protection of Children** • Visits by Boy Scouts and Girl Scouts to SCI are controlled, and scheduled/sited to avoid military training activities, proposed activities would not affect transient populations of children on the island.	• No impact
Alternative 1	**Environmental Justice** • Impacts would be the same as under the No Action Alternative. **Protection of Children** • Impacts would be the same as under the No Action Alternative.	• No impact
Alternative 2 (Preferred Alternative)	**Environmental Justice** • Impacts would be the same as under the No Action Alternative. **Protection of Children** • Impacts would be the same as under the No Action Alternative.	• No impact
Mitigation Measures	• None necessary.	

ES 1.5.16 Public Safety

Public safety issues include potential hazards inherent in flight operations, vessel movements, torpedo drops, mine laying, shore bombardment, underwater demolition, and onshore small arms firing. It is the policy of the Navy to observe every possible precaution in the planning and execution of all activities that occur onshore or offshore to prevent injury to people or damage to property.

The Navy temporarily limits public access to areas where there is a risk of injury or property damage. The Navy notifies the public of hazardous activities through the use of NOTAMs, NOTMARs, and the Southern California Offshore Range (SCORE) website. Prior public notification of Navy training and RDT&E activities, use of known training areas, avoidance of nonmilitary vessels and personnel, and the remoteness of the offshore training areas from coastal population centers reduce the potential for interaction between the public and Navy vessels. To date, these conservative safety strategies have been successful and are expected to continue to be successful with implementation of alternatives.

Management of hazardous materials and hazardous wastes during Navy training exercises in the SOCAL OPAREAs is addressed in Section 3.3. No substantial releases of these materials to the environment are anticipated. Specific impacts to public health and safety are listed in Table ES-17.

Table ES-17: Summary of Effects to Public Health and Safety by Alternative

Alternative	NEPA (On-Land and U.S. Territorial Waters)	EO12114 (Non-U.S. Territorial Waters)
No Action Alternative	• Range clearance procedures are implemented prior to activities for both on-island and water range areas. Activities will not proceed unless the range is clear of nonparticipants. Therefore, there is no risk to public safety.	• Range clearance procedures are implemented prior to activities for range areas in non-U.S. Territorial Waters. Activities will not proceed unless the range is clear of nonparticipants. Therefore, there is no risk to public safety.
Alternative 1	• Impacts on Public Safety under Alternative 1 would be the same as the No Action Alternative.	• Impacts on Public Safety under Alternative 1 would be the same as the No Action Alternative.
Alternative 2 (Preferred)	• Impacts on Public Safety under Alternative 2 would be the same as the No Action Alternative.	• Impacts on Public Safety under Alternative 2 would be the same as the No Action Alternative.
Mitigation Measures	• Fleet Area Control and Surveillance Facility (FACSFAC) and SCORE have published safety procedures for activities on the offshore and nearshore areas. These guidelines are directive for range users. • Aircraft in W-291 fly under Visual Flight Rules and under visual meteorological conditions. • To enhance the safety of submarines while on the range, minimum vertical and horizontal separation distances are specified. • Prior to launching any weapon, ships are required to obtain a "Green Range," which indicates that all safety criteria have been satisfied, and that the weapons and target recovery conditions and recovery helicopters and boats are ready to be employed. • A Missile Exercise (MISSILEX) Letter of Instruction is prepared prior to any missile firing exercise. This instruction establishes precise ground rules for the safe and successful execution of the exercise. • Procedures are required to protect individuals from the hazard of severe eye injury due to the nature of the laser light used during certain targeting operations. • Hazards of Electromagnetic Radiation (EMR) to Personnel, Ordnance, and Fuel have been determined for EMR sources based on frequency and power output.	

ES 1.6 CUMULATIVE IMPACTS

The analysis of cumulative impacts considers the effects of the Proposed Action in combination with other past, present, and reasonably foreseeable future actions taking place in the project area, regardless of what agency or person undertakes these actions. This EIS/OEIS analyzes cumulative impacts associated with implementation of Navy-sponsored activities and other non-Navy activities in the region. The cumulative project list for SCI includes 25 projects ranging from minor construction to major infrastructure type projects, as well as various military training projects. Other activities included fishing, commercial and recreational marine traffic, oil extraction, liquid natural gas terminal proposals, ocean pollution, coastal development, scientific research, commercial and general aviation, and air quality factors. Potential cumulative impacts resulting from other relevant projects (such as those listed above) combined with the Proposed Action addressed in this EIS/OEIS were determined to be less than significant.

ES 1.7 MITIGATION MEASURES

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

Effective training and testing in the SOCAL Range Complex dictates that ship, submarine, and aircraft participants utilize their sensors and exercise weapons to their optimum capabilities as required by the mission. As part of its commitment to sustainable use of resources and environmental stewardship, the Navy incorporates measures that are protective of the environment into all of its activities. Some of these measures are generally applicable and others are designed to apply to certain geographic areas during certain times of year, for specific types of Navy training and testing. Conservation measures covering habitats and species occurring in the SOCAL Range Complex have been developed through various environmental analyses conducted by the Navy for land and sea ranges and adjacent coastal waters. The discussion in Chapter 5 describes mitigation measures applicable to Navy activities in the SOCAL Range Complex.

ES 1.8 OTHER REQUIRED CONSIDERATIONS

ES 1.8.1 Possible Conflicts with Objectives of Federal, State, and Local Plans, Policies, and Controls

Based on an evaluation with respect to consistency with statutory obligations, the Navy's alternatives including the Proposed Action for the SOCAL Range Complex EIS/OEIS do not conflict with the objectives or requirements of Federal, state, regional, or local plans, policies, or legal requirements. Chapter 6, Table 6-1, provides a summary of environmental compliance requirements that may apply.

ES 1.8.2 Relationship Between Short-term Uses and Long-term Productivity

The Proposed Action would result in both short- and long-term environmental effects. However, the Proposed Action would not be expected to result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public. The Navy is committed to sustainable range management, including co-use of the SOCAL Range Complex with the general public and commercial interests to the extent practicable consistent with accomplishment of the Navy mission and in compliance with applicable law. This commitment to co-use enhances the long-term productivity of the range areas surrounding SOCAL Range Complex.

ES 1.8.3 Irreversible or Irretrievable Commitment of Resources

For the alternatives including the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most impacts are short-term and temporary. Implementation of the Proposed Action would require fuels used by aircraft, ships, and ground-based vehicles. Total fuel consumption would increase and this nonrenewable resource would be considered irreversibly lost.

ES 1.8.4 Energy Requirements and Conservation Potential

Increased training and testing operations on the SOCAL Range Complex would result in an increase in energy demand over the No Action Alternative. Energy requirements would be subject to established energy conservation practices. The use of energy sources has been minimized wherever possible without compromising safety, training, or testing operations. No additional conservation measures related to direct energy consumption by the proposed operations are identified.

ES 1.8.5 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. Pollution prevention is an important component of mitigation of the alternative's adverse impacts. To the extent practicable, pollution prevention considerations are included. Sustainable range management practices are in place that protect and conserve natural and cultural resources; and preservation of access to training areas for current and future requirements, while addressing potential encroachments that threaten to impact range capabilities.

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