HAWAII-CALIFORNIA TRAINING AND TESTING

FINAL ENVIRONMENTAL IMPACT STATEMENT/ OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

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Hawaii-California Training and Testing

Draft Environmental Impact Statement/ Overseas Environmental Impact Statement



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Appendix G Air Quality Supplemental Information, Emission Calculations, and Record of Non-Applicability

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Appendix G Air Quality Supplemental Information, Emissions Calculations and Record of Non-Applicability

This appendix discusses supplemental information, emission factor development, calculations, and assumptions used in the air quality analyses presented in Section 3.1 (Air Quality and Greenhouse Gas Emissions) of the Hawaii-California Training and Testing EIS/OEIS. Records of non-applicability for the affected area are also included.

G.1 Air Quality Supplemental Information and Emission Calculations

Air pollution can damage the health of people, plants, animals, and water bodies as well as the exteriors of buildings, monuments, and statues. It also creates haze or smog that reduces visibility and interferes with aviation. A region's air quality is influenced by many factors, including the type and emission rate of pollutants, local meteorology, the size and topography of the air basin, and atmospheric chemistry. Wind speed and direction, the vertical temperature gradient of the atmosphere, and precipitation patterns affect the dispersal, dilution, and removal of air pollutant emissions from the atmosphere. Most air pollutants originate from human-made sources, including mobile sources (e.g., gasoline- or diesel-fueled vehicles) and stationary sources (e.g., power plants, refineries), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions and wildfires. Ambient air quality is reported as the atmospheric concentrations of specific air pollutants at a particular time and location. The units of measure are expressed as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

G.1.1 Emission Sources

Criteria air pollutants and HAPs are generated by the combustion of fuel by surface vessels and by fixed-wing and rotary-wing aircraft. They also are generated by the combustion of explosives and propellants in various types of munitions. Propellants used to fire small-, medium-, and large-caliber projectiles generate pollutants when detonated. Nonexplosive practice munitions may contain spotting charges and propellants that generate air pollutants when they function. Powered targets require fuel, generating air pollutants during their operation, and towed targets generate air pollutants secondarily because another aircraft or vessel is required to provide power. Stationary targets may generate air pollutants if all or portions of the item burn in a high-order detonation. Chaff cartridges used by ships and aircraft are launched by an explosive charge that generates small quantities of air pollutants. Chaff itself may also be a particles with aerodynamic diameters less than or equal to a nominal 10 micrometers (PM_{10})/ particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$) pollutant, depending on its size. Countermeasure flares, decelerators/parachute flares, and smoke floats are designed to burn for a prescribed period, emitting pollutants in the process. Emissions from activities related to modernization and sustainment of ranges are also estimated and the impacts analyzed.

G.1.2 Emissions Estimates

To estimate the increase in emissions for the Proposed Action, the changes in emissions were calculated for each training or testing activity, for Alternative 1 and Alternative 2, relative to the current activity level. The emissions calculations performed for each alternative conservatively assume that each training and testing activity is separately conducted. In practice, a testing activity may be conducted during a training flight. It is also probable that two or more training activities may be conducted during

one flight or one vessel movement (e.g., chaff or flare exercises may occur during electronic warfare activities; or air-to-surface gunnery and air-to-surface bombing activities may occur during a single flight operation, or ship may conduct large-, medium-, and small-caliber surface-to-surface gunnery exercises during one vessel movement). Conservative assumptions may produce elevated emissions calculations but account for the possibility, however remote, that each aircraft training and testing activity is separately conducted.

G.1.2.1 Aircraft Activities

Aircraft emissions were estimated based on the methodology described in the 2018 HSTT EIS/OEIS. Fleet training and Naval Air Systems Command testing use various aircraft, including the E/A-18G, P-8, and CH-60. Aircraft operations of concern are those that occur from ground level up to 3,000 feet (ft.) above ground level (AGL). The 3,000 ft. AGL altitude was assumed to be the ceiling of the mixing zone (known as the atmospheric mixing height) above which any pollutant generated would not contribute to increased pollutant concentrations at ground level. Pollutants emitted by aircraft above 3,000 ft. AGL are excluded from the analysis of compliance with National Ambient Air Quality Standards. The pollutant emission rate is a function of the aircraft engine's fuel flow rate and efficiency. Emissions for one complete training activity for a particular aircraft are calculated by knowing the specific engine pollutant emission factors for each mode of operation.

Emission factors for most military engines were obtained from the Navy's Aircraft Environmental Support Office memoranda. For those aircraft for which engine data were unavailable from Aircraft Environmental Support Office, emission factors from Air Emissions Guide for Air Force Mobile Source, June 2024 (U.S. Department of the Air Force, 2024), were used. Using these data, as well as the number of sorties, pollutant emissions for each aircraft were calculated by applying the equation below.

$$Emissions = NxFF \times EF \times ENG \times CF$$

Where:

Emissions = annual aircraft emissions (pounds [lb.]/yr.)

N = Hours of operation of aircraft operations per year for each type of aircraft per activity (hr./yr.)

FF = fuel flow at a specified power setting (gal./hr./engine)

EF = pollutant emission factor by engine type and power setting (lb./1,000 gal. of fuel used)

ENG = number of engines per aircraft

CF = conversion factor (0.001)

Hazardous Air Pollutant (HAP) emissions were estimated based on June 2024 Air Emissions Guide for Air Force Mobile Sources, Table 2-10 (Volatile Organic Compound and HAP Emission Factors for Select Engines) (Air Force Civil Engineer Center, 2023). HAP emissions from activities in the range areas occur well offshore and far from any publicly accessible areas. HAP emissions from activities that occur within 12 nautical miles (NM) may impact the publicly accessible areas on shore.

G.1.2.2 Military Vessel Activities

Military vessel traffic in the Study Area includes military ships and vessels providing security for military training and testing activities during transit from the pier to the range and back. Fleet training activities use a variety of marine vessels, including cruisers, destroyers, frigates, carriers, submarines, amphibious

vessels, and small boats. Testing activities use a variety of marine vessels, including various testing support vessels, work boats, torpedo recovery vessels, unmanned surface vehicles, and small boats. These vessels use diverse propulsion methods, including marine outboard engines, diesel engines, and gas turbines.

Emissions from military vessels and small boats are estimated based on the type of vessel, the anticipated activity, and the average operating hours in each operational area, both within state waters and beyond state waters. The types of military ships and boats as well as the numbers of activities for Alternatives 1 and 2 are derived from range records and Navy subject matter experts regarding ship participant data. Estimates of future military vessel activities are based on anticipated evolutionary changes in the military's force structure and mission assignments.

Emission factors for small surface craft involved in amphibious training and testing activities were obtained from the Navy and Military Sealift Command Marine Engine Fuel Consumption & Emission Calculator database Version October 2024. Emissions for surface craft using outboard engines were calculated using Navy and Military Sealift Command emission factors which are provided in terms of Vessel Emission Total per hour and multiplied by the hours of operation.

$$Emissions = HR/YR \times EF$$

Where:

Emissions = surface craft emissions (*pounds [lb.]/yr)*

HR/YR = hours per year per vessel per activity (hr/yr)

EF = emission factor for specific vessel (lb./hr)

Large vessel emissions were calculated in a similar fashion using emission factors from the Naval Sea Systems Command Navy and Military Sealift Command Marine Engine Fuel Consumption and Emission Calculator for the propulsion system and the supplemental ship service generator(s).

To estimate the criteria pollutant emissions for the Proposed Action, emissions were calculated for each training or testing activity, type of surface vessel, and criteria pollutant. These individual estimates of emissions, in units of tons per year, were then summed by criteria pollutant to obtain the aggregate emissions for surface vessel emissions activities.

HAP emissions were estimated based on the speciation factors in the U.S. Environmental Protection Agency (USEPA) Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (U.S. Environmental Protection Agency, 2022).

G.1.2.3 Munitions

Naval gunfire, missiles, bombs, and other types of munitions used in training and testing activities emit air pollutants. To estimate the amounts of air pollutants emitted by munitions, the numbers and types of munitions used during training or testing activities are first totaled. Then generally accepted emissions factors, such as those from USEPA AP-42, *Compilation of Air Pollutant Emission Factors* Section 15, for criteria air pollutants and HAPs are applied to the total amounts (U.S. Environmental Protection Agency, 1995). These factors are multiplied by the net weight of the explosive and the number of items that were used per year. This calculation provides estimates of annual emissions.

Emissions = EXP/YR×EF×Net Wt

Where:

Emissions = annual ordnance emissions

EXP/YR = number of explosives, propellants, and pyrotechnics items used per year

EF = air pollutant emissions factor per item

Net Wt = net weight of explosive, propellant, or pyrotechnics per ordnance item

G.1.3 Port Damage Repair

The Proposed Action includes Port Damage Repair, conducted at Naval Base Ventura County Port Hueneme. The repair activities would include the use of diesel-fired construction equipment, including cranes, air compressors, and concrete pumps. Small boats would also be used for the duration of the repair. California Air Resources Board Off-Road Diesel Emission Factors were used to estimate the emissions.

G.1.4 Modernization and Sustainment of Ranges

The Proposed Action also includes modernization and sustainment of ranges activities that involve Navy and contractor vessels. These activities include the Southern California Anti-Submarine Warfare Range modernization; the installation, testing, and maintenance of two Shallow Water Training Ranges; maintenance of underwater platforms, and mine warfare.

G.1.5 Greenhouse Gas Emissions

As of April 11, 2025, the Council on Environmental Quality implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508) for the National Environmental Policy Act (NEPA) 42 United States Code 4321 et seq., are no longer in effect. In light of this change, the Navy's analysis of greenhouse gas (GHG) emissions is included in the EIS/OEIS to comply with applicable federal case law. The Proposed Action is anticipated to release GHGs into the atmosphere. Because GHGs can persist in the atmosphere and disperse globally, emissions from various sources, including the proposed training and testing activities, can collectively contribute to the overall atmospheric concentration of GHGs. These emissions are quantified using the aircraft and vessel emission calculation methodologies described in Section G.1.2. All emissions of GHGs from aircraft and vessels participating in training and testing activities on range only, as well as targets and munitions expended, are applicable regardless of altitude. The GHG emissions from aircraft activities at Naval Air Station Lemoore were previously analyzed in the 2014 EIS for U.S. Navy F-35C West Coast Homebasing (U.S. Department of the Navy, 2014) and are therefore not included in this analysis.

G.1.6 Meteorological Conditions and Topography of the Study Area

Pollution dispersion in the air is influenced by meteorological conditions, such as temperature, wind speed and wind direction, and atmospheric stability. Warmer air traps cooler air near the surface and can slow dispersion, whereas unstable atmospheric conditions can facilitate dispersion. Topography is another factor that influences pollutant dispersion. Urban areas with tall buildings can disrupt wind patterns and trap pollutants. Mountains and valleys can channel air and promote dispersion or trap pollutants during inversions. Wind direction determines the dispersion path pollutants take. Higher wind speeds disperse pollutants over a larger area; stagnant conditions or light winds allow pollutant concentrations to build up due to a more coherent plume. A wind rose for a particular location provides

a view of how wind speed and direction are typically distributed. The wind rose represents the directions around a compass, and the length of the petal or spoke indicates wind direction and frequency toward the center point. Individual segments of the spoke represent the frequency of winds for defined wind speed categories, with the slowest winds closest to and the fastest winds furthest from the center of the diagram. The Pacific Ocean and adjacent land areas are influenced by the temperatures of the surface waters and water currents as well as by wind blowing across the water. Offshore areas seldom have extreme seasonal variations because the ocean is slow to change temperature. Ocean currents move warm and cold water between regions. Adjacent land areas are affected by the wind that is cooled or warmed when blowing over these currents.

Atmospheric stability and mixing height provide measures of the amount of vertical mixing of pollutants. Over water, the atmosphere tends to be neutral to slightly unstable. Over land, atmospheric stability is more variable, being unstable during the day, especially in summer due to rapid surface heating, and stable at night, especially under clear conditions in winter. The mixing height over water typically ranges from 1,640 to 3,281 ft. with a slight diurnal (daytime) variation (U.S. Environmental Protection Agency, 1972). The air quality analysis presented in this EIS/OEIS assumes that 3,000 ft. (40 CFR 93.153(c)(2)(iii)) AGL is the typical maximum afternoon mixing height, and thus criteria pollutants and HAPs emitted above this altitude do not affect ground-level air pollutant concentrations.

Studies indicate that extreme weather events are likely to become more frequent or more intense as a result of GHG emissions that trap heat in Earth's atmosphere (U.S. Environmental Protection Agency, 2024). Climate variation can also have an influence on El Niño and La Niña cycles, which are natural climate phenomena in the Pacific Ocean. During El Niño, the surface winds across the entire tropical Pacific are weaker than usual and ocean temperatures in the central and eastern tropical Pacific Ocean are warmer than average. During La Niña, the surface winds across the entire tropical Pacific are stronger than usual, and most of the tropical Pacific Ocean is cooler than average. These cycles can influence meteorological conditions that affect pollutant dispersion.

G.1.6.1 Wind Roses

Figure G-1 through G-10 depict wind roses from data collected from January 2019 to December 2023 by the weather stations close to regions where the proposed activities would occur.

Winds and currents in the Pacific Ocean flow predominantly from east to west. Above the equator Pacific Ocean trade winds blow from the northeast. Figure G-11 depicts an example of the prevailing wind direction and intensity in the Pacific Ocean.

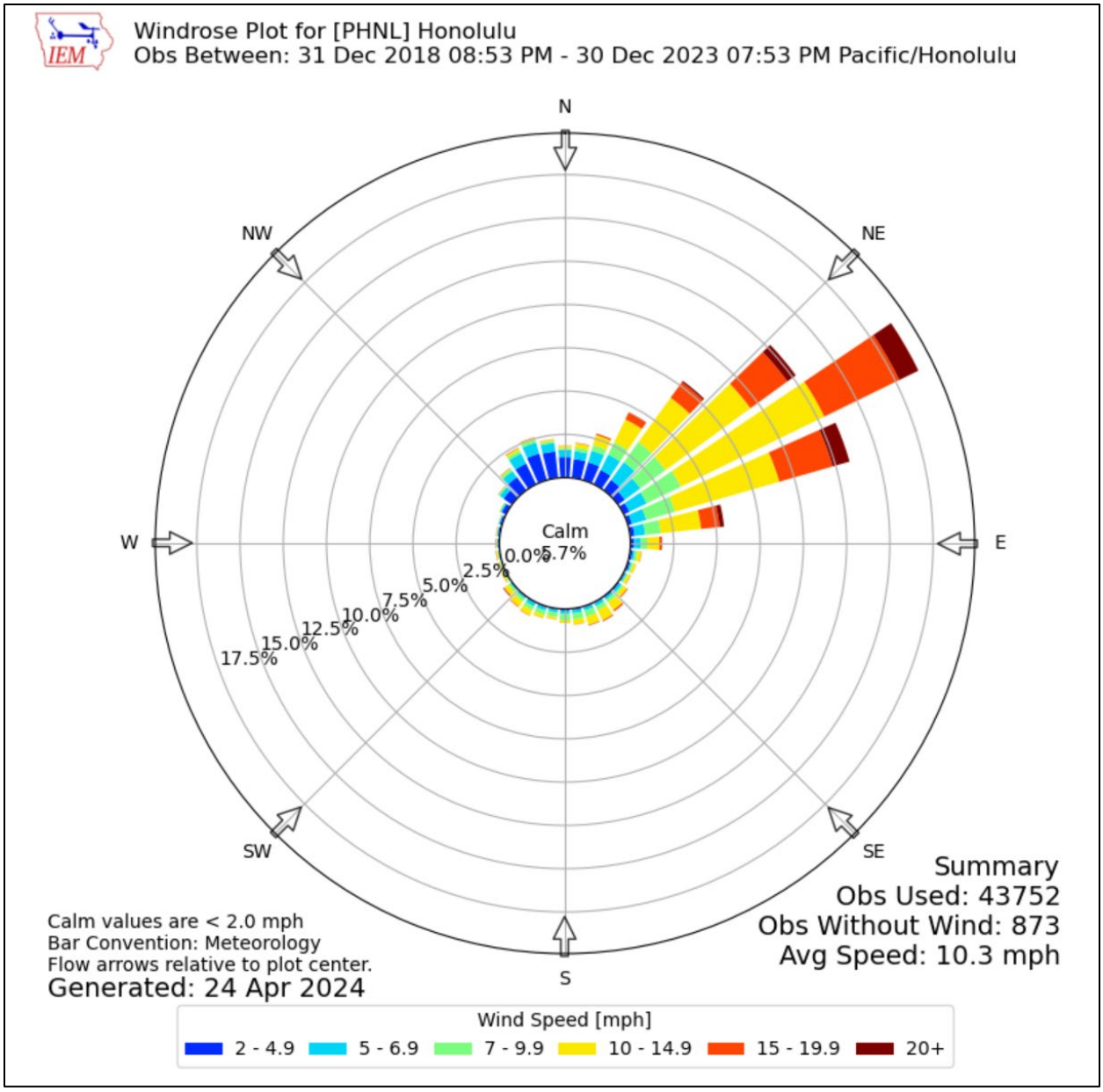


Figure G-1: Honolulu Wind Rose, PHNL Weather Station

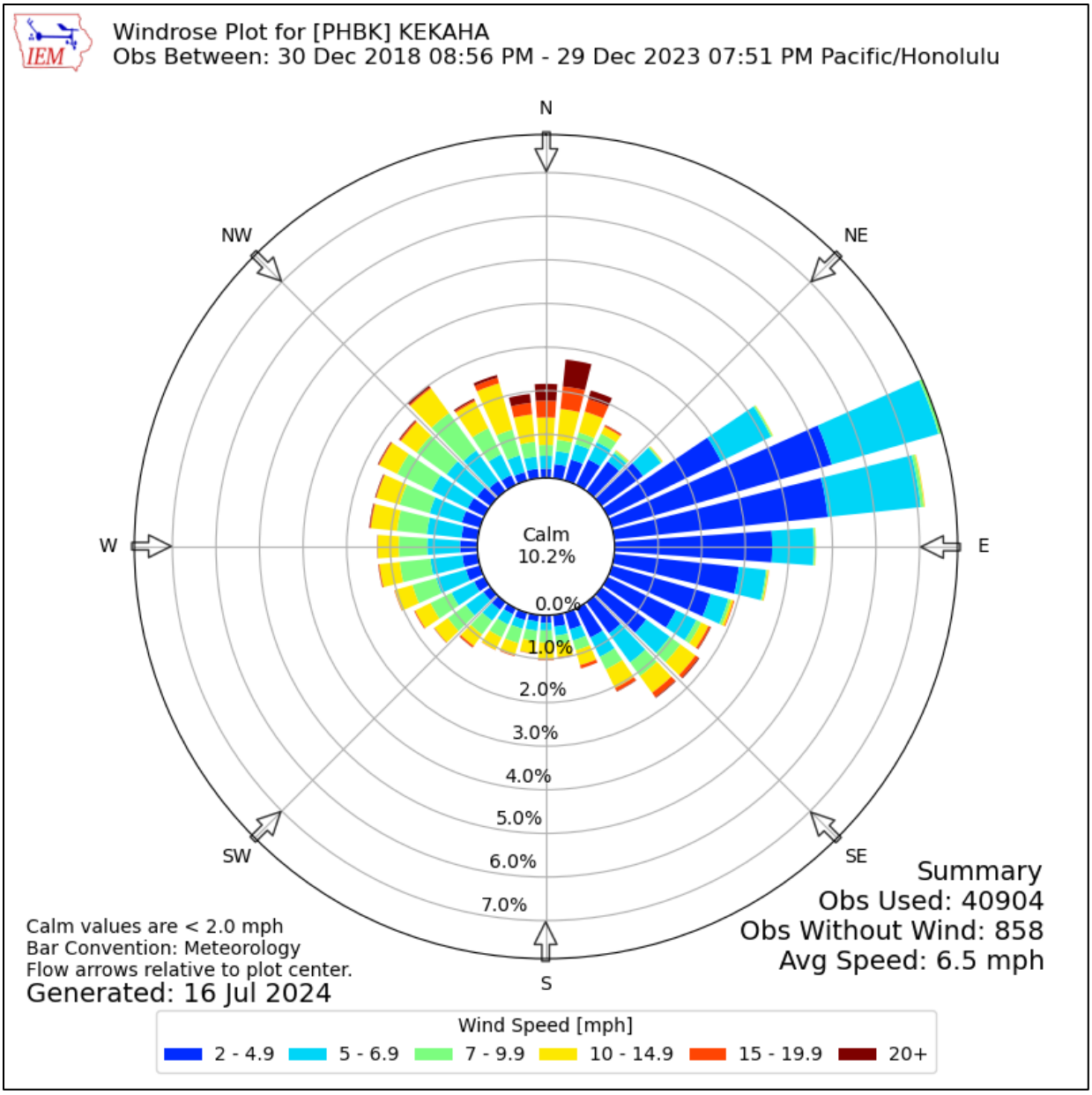


Figure G-2: Kauai Wind Rose, Kekaha Weather Station

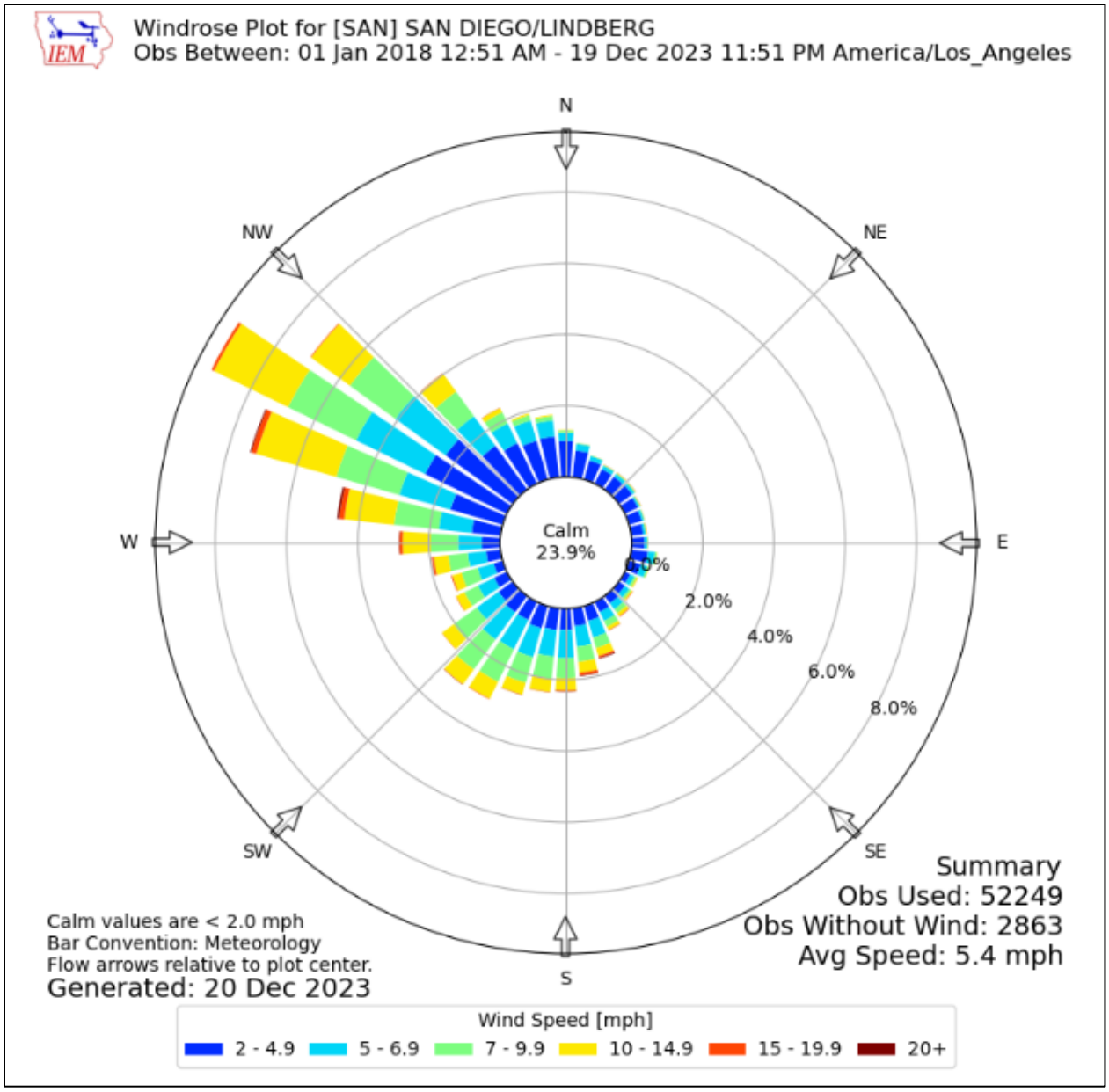


Figure G-3: San Diego Wind Rose, Lindbergh Station

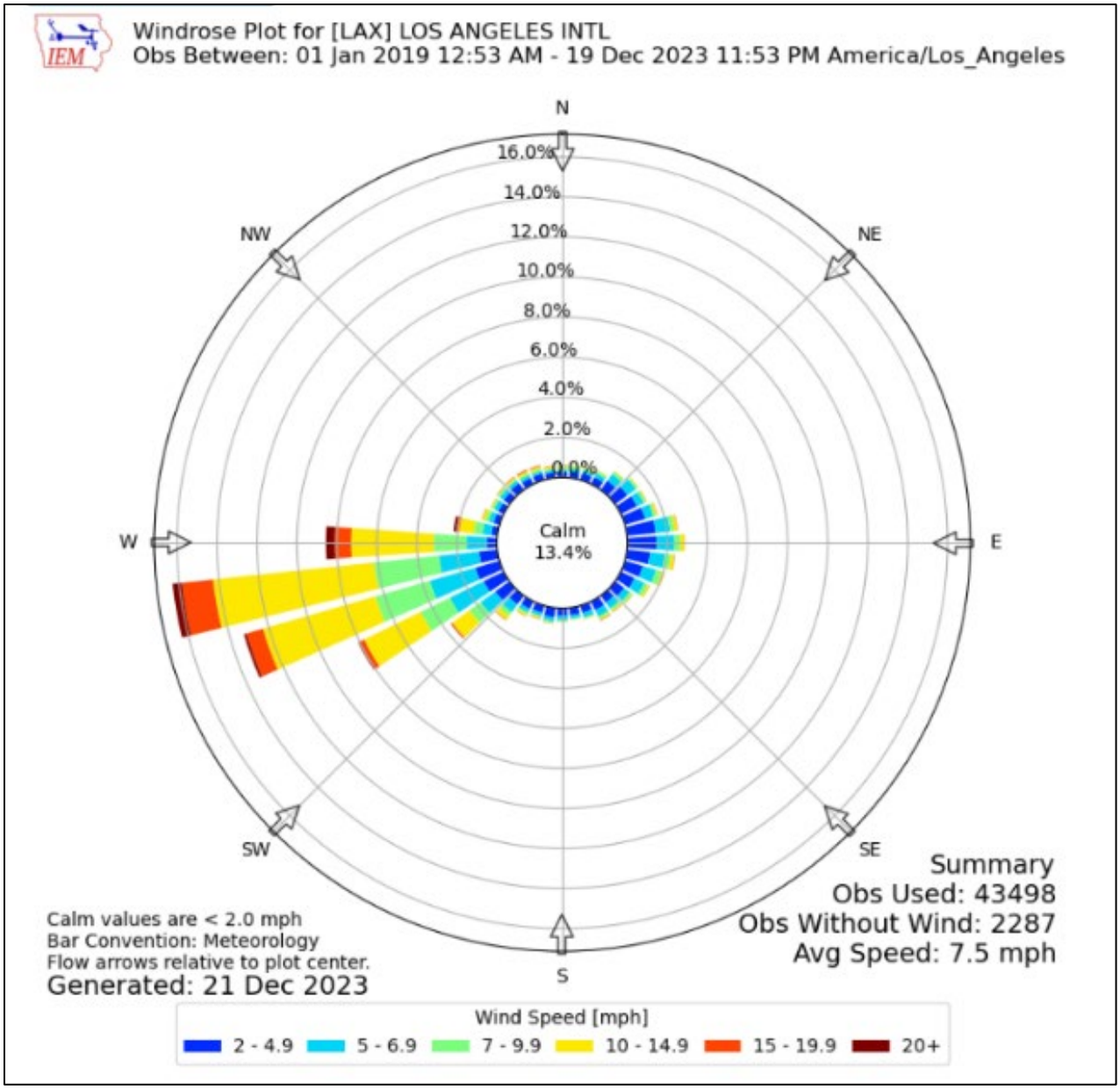


Figure G-4: Los Angeles Wind Rose, Los Angeles International Airport

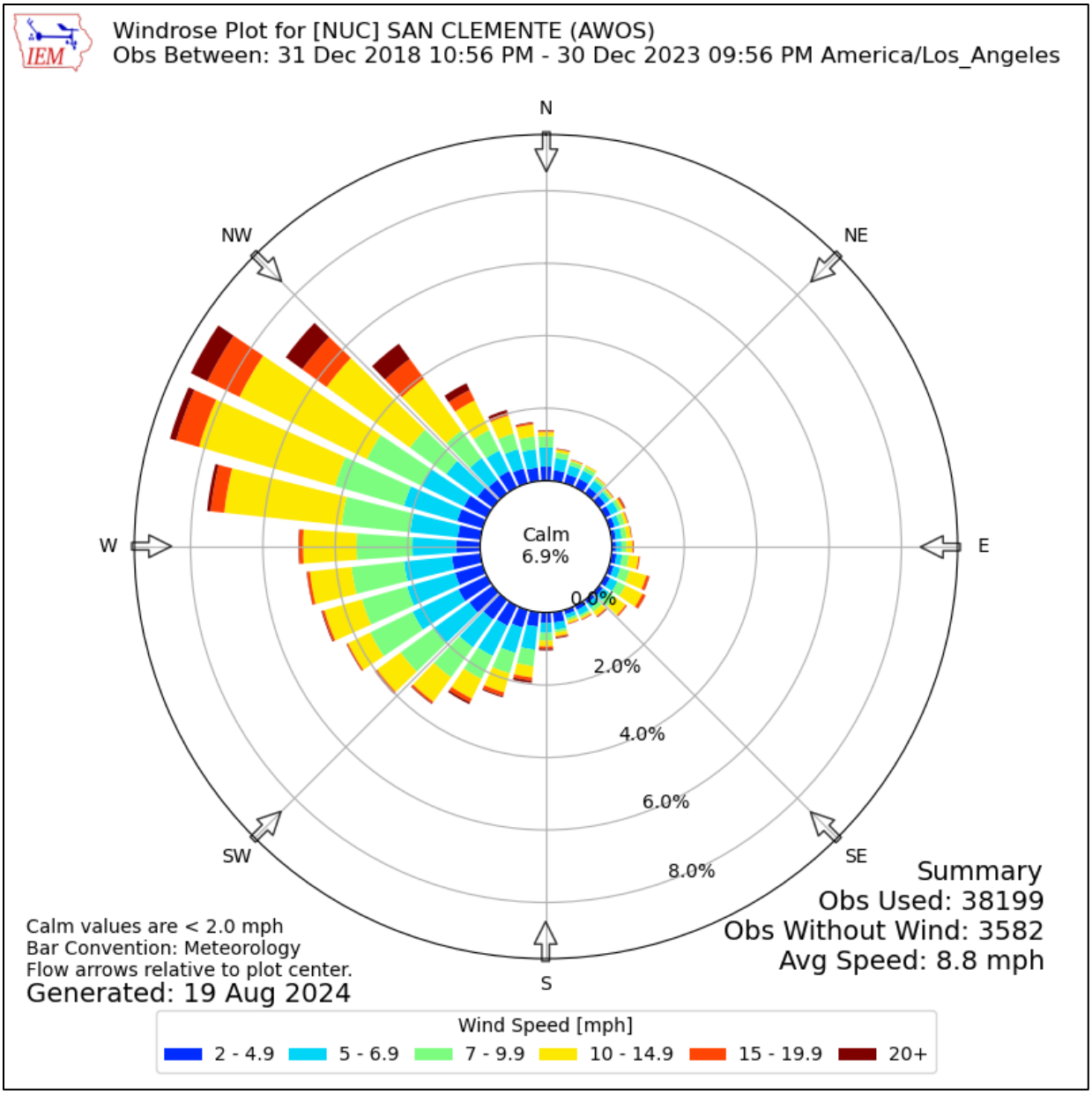


Figure G-5: San Clemente Island Wind Rose, San Clemente Island Airport

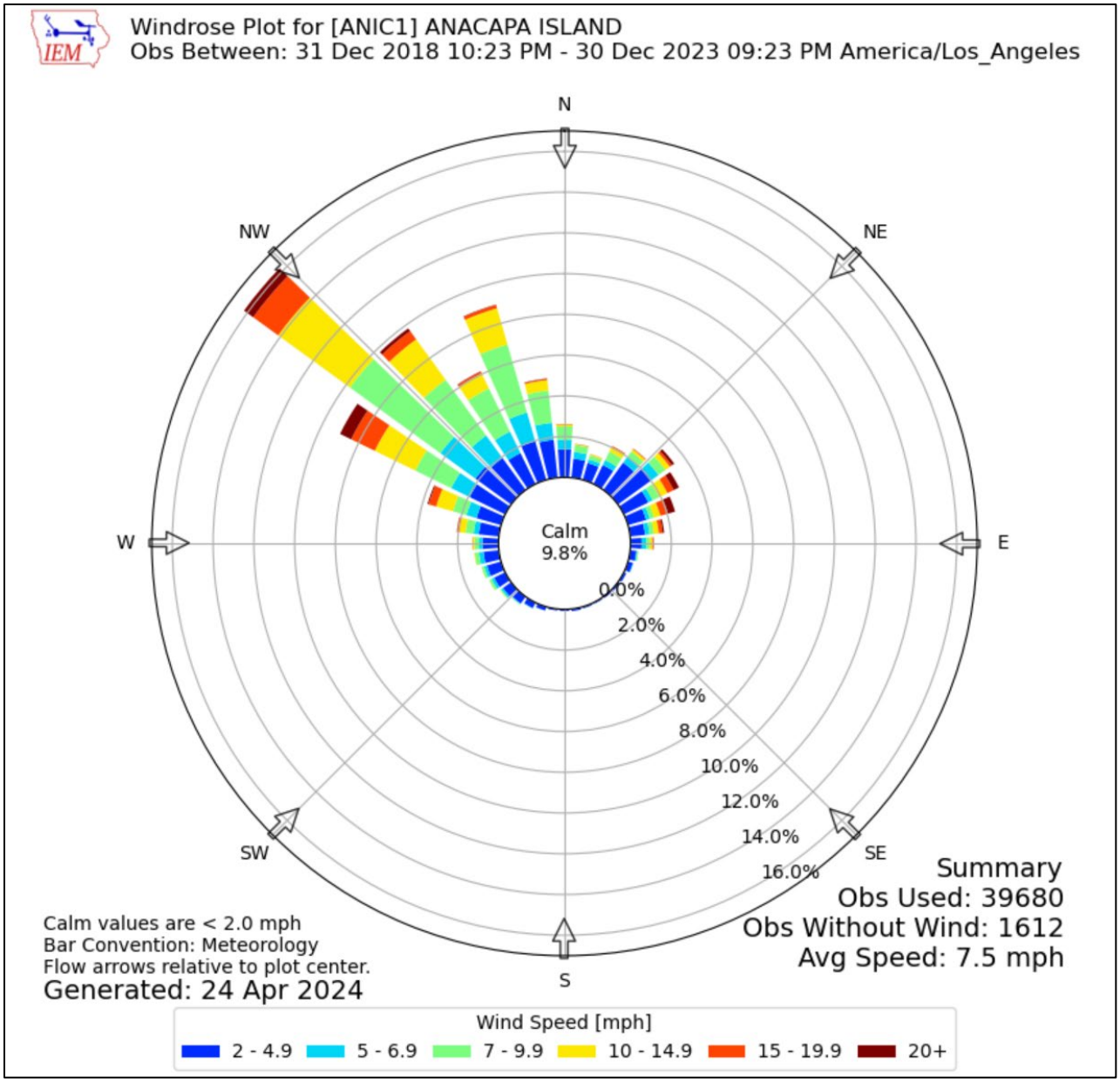


Figure G-6: Anacapa Island Wind Rose

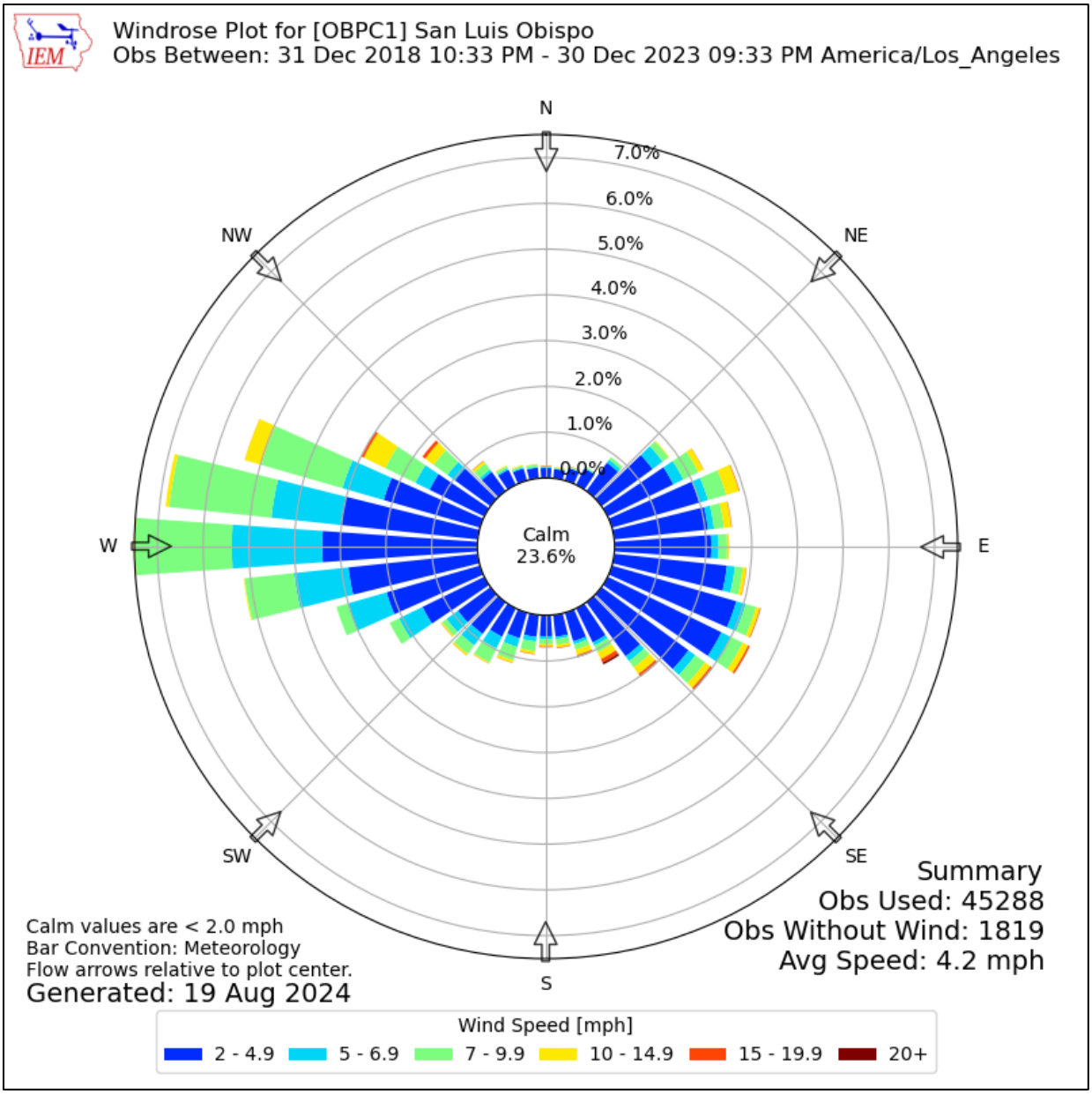


Figure G-7: San Luis Obispo Wind Rose - Rancho San Simeon Airport

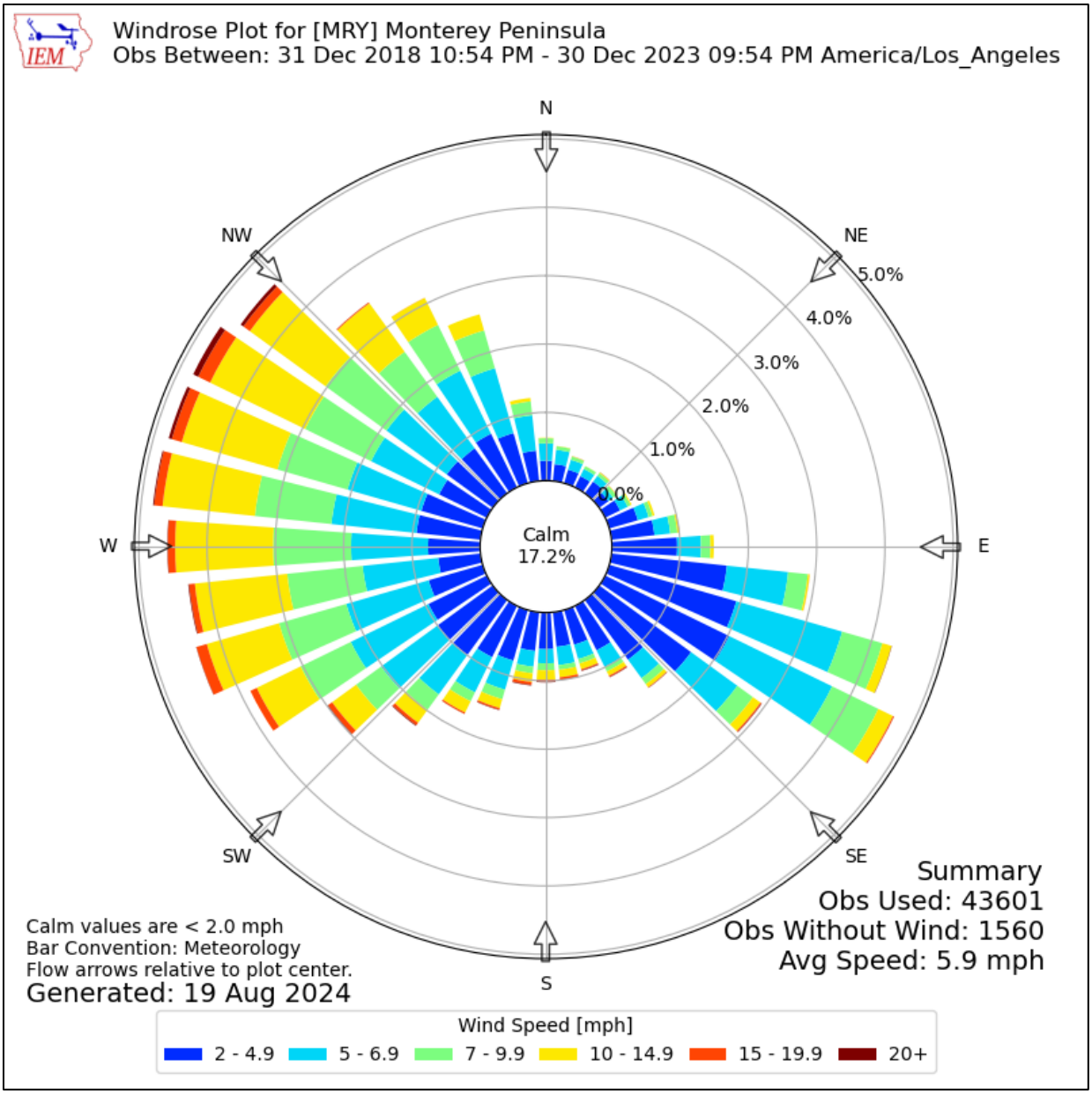


Figure G-8: Monterey Wind Rose - Monterey Regional Airport

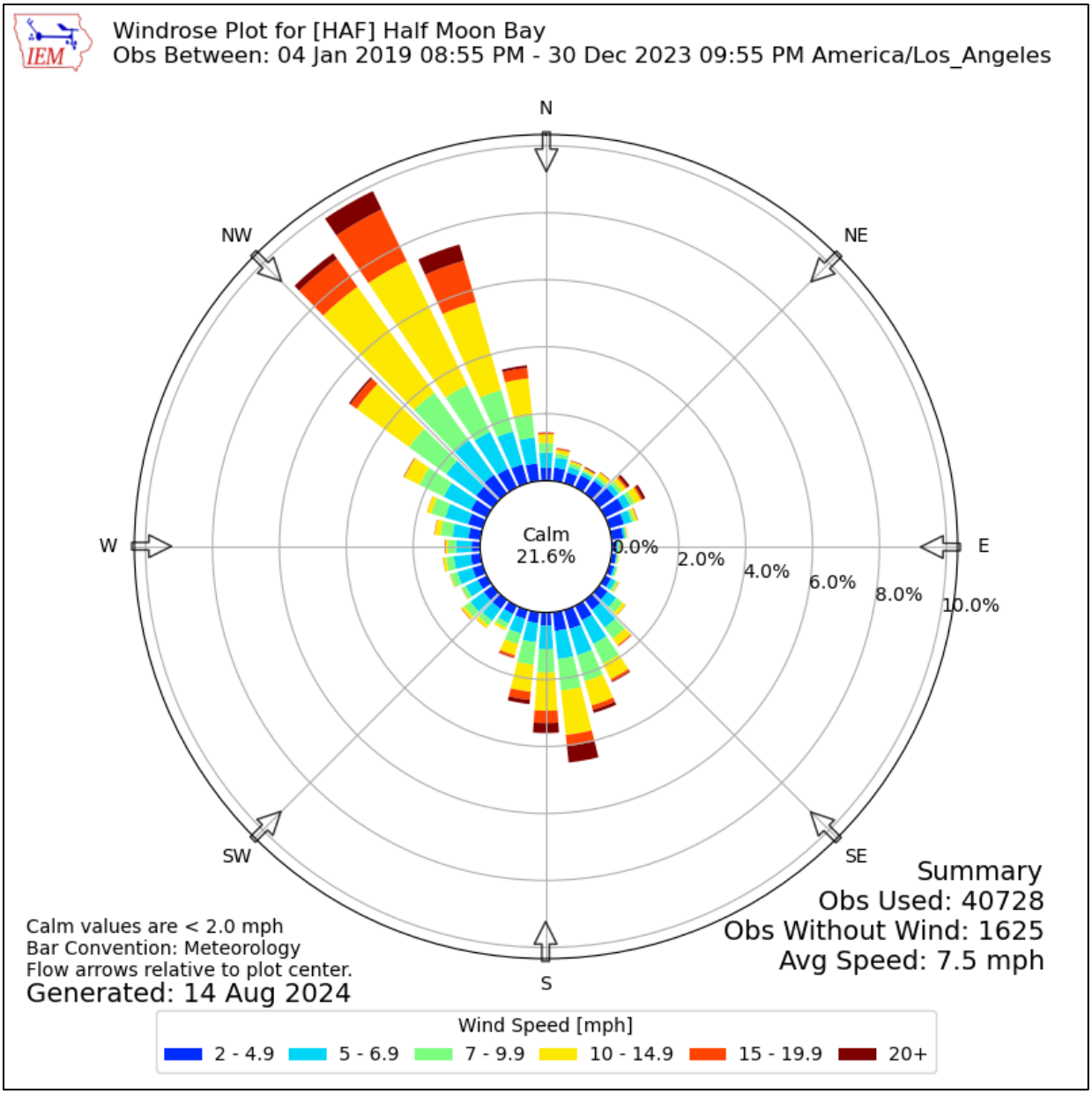


Figure G-9: Half Moon Bay Airport Wind Rose

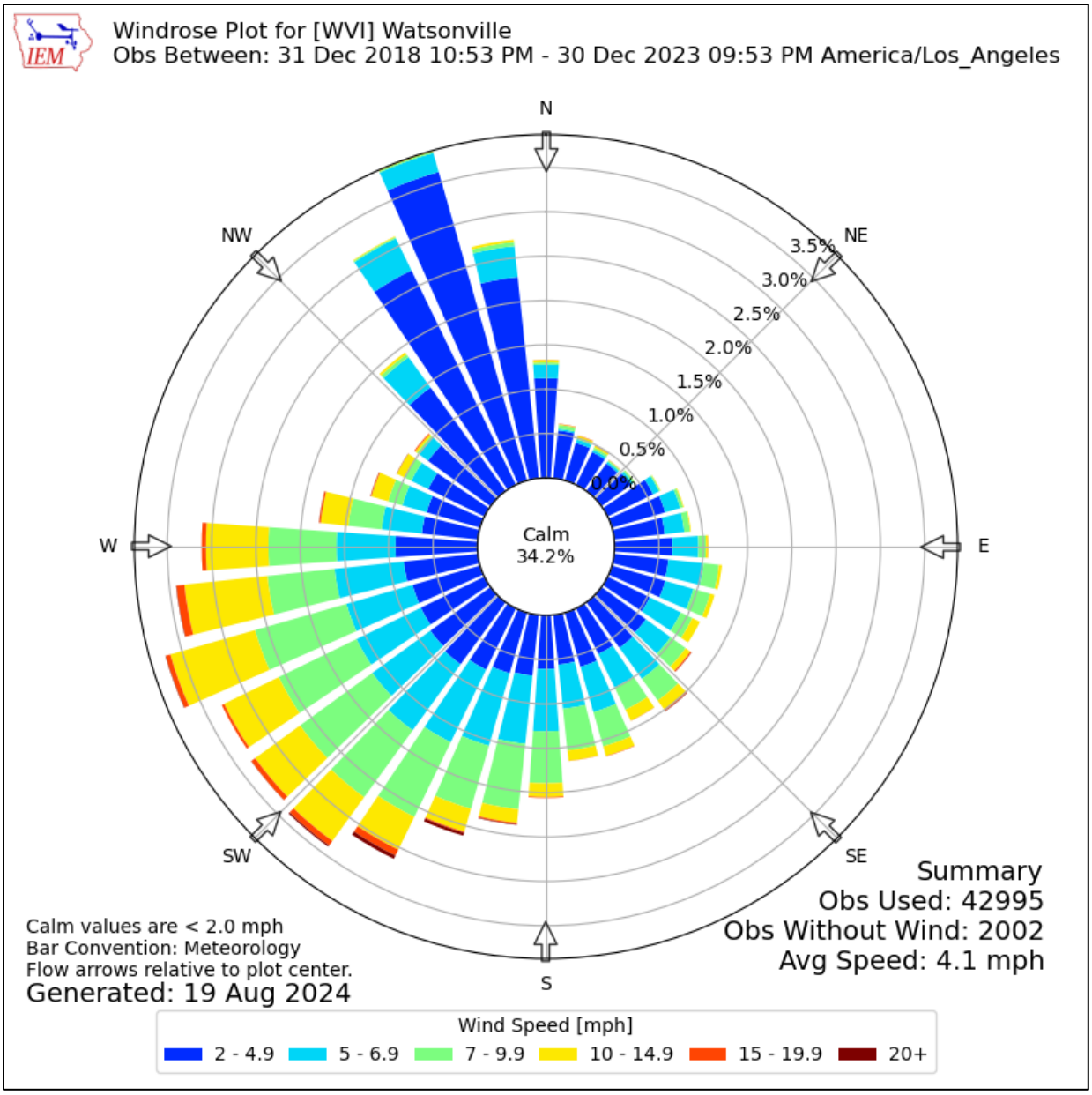
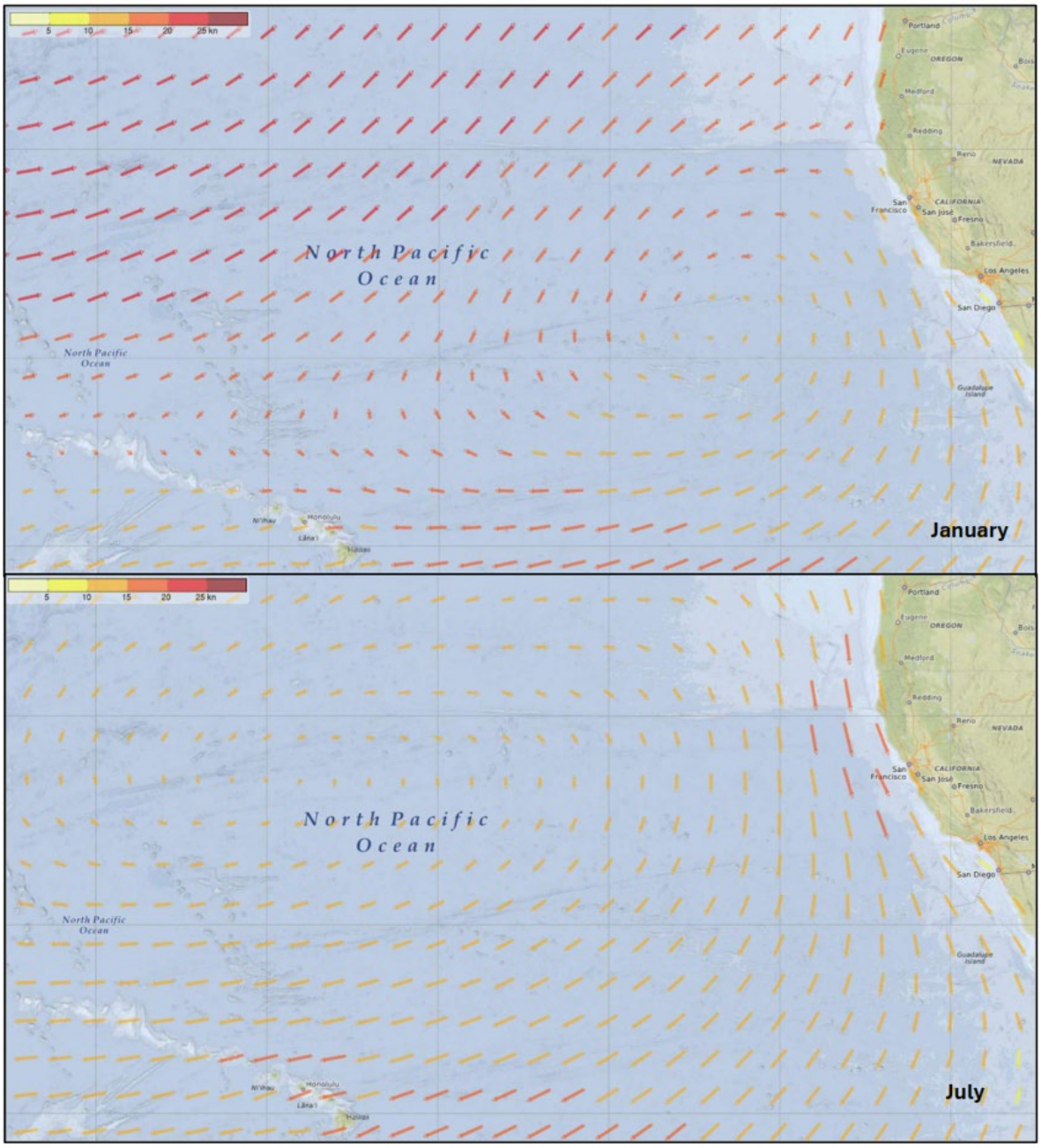


Figure G-10: Watsonville Municipal Airport Wind Rose



Source: https://www.pitufa.at/oceanwinds/

Figure G-11: Prevailing Wind Direction and Intensity in the Pacific Ocean

G.1.7 Existing Air Quality

G.1.7.1 Hawaii

With the exception of short-term SO_2 measurements recorded in 2023 near volcanic activity, none of the air quality monitoring stations in Hawaii recorded criteria air pollutant concentrations that exceeded the Ambient Air Quality Standards (AAQS) (Hawaii Department of Health, 2016).

Table G-1 shows the 2022 Design Value for Honolulu, available via USEPA's Interactive Design Value Tool or from the State of Hawaii 2023 Air Monitoring Network Plan (State of Hawaii Department of Health,

2023). A design value is a statistic that describes the air quality status of a given location relative to the level of the National Ambient Air Quality Standards (NAAQS).

Table G-1: Comparison of 2022 Honolulu Design Values with AAQS

Pollutant	Averaging Time	Most Stringent AAQS	Maximum Design Values (Station)	% of AAQS
CO	1-hour	9 ppm (State)	0.9 ppm (Honolulu)	10
	8-hour	4.4 ppm (State)	1.5 ppm (Honolulu)	34
NO_2	1-hour	0.100 ppm (NAAQS)	0.023 ppm (Kapolei)	23
	Annual	0.04 ppm (State)	0.003 ppm (Kapolei)	8
PM_{10}	24-hour	150 µg/m^3 (NAAQS)	51 µg/m^3 (Kapolei)	34
$PM_{2.5}$	24-hour	35 µg/m^3 (NAAQS)	6 µg/m^3 (Pearl City)	17
	Annual	9 µg/m^3 (NAAQS)	3.7 µg/m^3 (Kapolei)	41
O_3	8-hour	0.075 ppm (NAAQS)	0.044 ppm (Kapolei)	59
SO_2	1-hour	0.075 ppm (NAAQS)	0.004 ppm (Kapolei)	5
	3-hour	0.5 ppm (State)	0.003 ppm (Kapolei)	<1

Source: (State of Hawaii Department of Health, 2023)

Notes: Lead monitoring ended December 31, 2018, with EPA approval. Concentrations of Pb measured from 2012 to 2018 were approximately 1–2 percent of the standard. µg/m^3 =microgram per cubic meter; AAQS = ambient air quality standards; CO = carbon monoxide; mg/m^3= milligram per cubic meter; NAAQS = National Ambient Air Quality Standards; NO_2 = nitrogen dioxide; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ppm = parts per million; O_3 = ozone; SO_2 = sulfur dioxide

Table G-2 shows the total criteria pollutant and top 10 HAP emissions for Honolulu based on the 2020 calendar year data for stationary, nonroad and mobile sources. Most of the criteria pollutant emissions are due to fuel combustion for electricity generation and mobile source operations.

Table G-2: Total Honolulu County Air Emissions for 2020

Criteria Pollutant and Precursors	Emissions, Tons/Year	HAP	Emissions, Tons/Year
Carbon Monoxide	77,700	Methanol	1,157
Nitrogen Oxides	20,652	Toluene	885
PM_{10} Primary	14,553	Formaldehyde	555
$PM_{2.5}$ Primary	4,369	Xylenes (Mixed Isomers)	577
Sulfur Dioxide	11,446	Acetaldehyde	358
Volatile Organic Compounds	37,295	2,2,4-Trimethylpentane	260
		Hexane	252
		Ethyl Benzene	127
		Ethylene Glycol	309

Source: USEPA 2020 National Emissions Inventory (NEI) Data

Notes: PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers

The Air Toxics Screening Assessment (AirToxScreen) is USEPA's screening tool to provide communities with information about health risks from air toxics. AirToxScreen gives a snapshot of outdoor air quality with respect to emissions of air toxics and is used as a screening tool for air agencies to prioritize pollutants and emission source types. Based on the 2019 emissions, the total cancer risk for Honolulu County (including the airport) is 50 per million, with formaldehyde, hexavalent chromium, benzene, and

carbon tetrachloride contributing to over 90 percent of the risk. The total non-cancer chronic respiratory hazard index for Honolulu County is one, with formaldehyde, acetaldehyde, and acrolein comprising over 90 percent of the risk. The hazard index is a ratio that compares a person's potential exposure to a chemical to the amount that could cause adverse health effects. A hazard index of one or lower means chronic adverse noncancer effects are unlikely.

G.1.7.2 South Coast Air Basin

In the 2018-2020 design value period, the South Coast Air Basin (SCAB) exceeded the 8- and 1-hour O_3 and annual $PM_{2.5}$ NAAQS, as shown in Figure G-12 (South Coast Air Quality Management District, 2022). Design values for CO, NO_2, lead and SO_2, obtained from USEPA's Interactive Design Value Tool are presented in Table G-3. Table G-4 presents the estimated 2020 emissions inventory for the SCAB in tons per day. In 2020, 31,144 tons of HAPs were emitted in the SCAB counties within the HCTT Study Area. Table G-5 presents the percentage of the top 10 HAPs that comprise 87 percent of the total HAPs emitted. USEPA AirToxScreen data indicate that Formaldehyde, carbon tetrachloride, benzene, and acetaldehyde are the main drivers for cancer risk in this air basin.

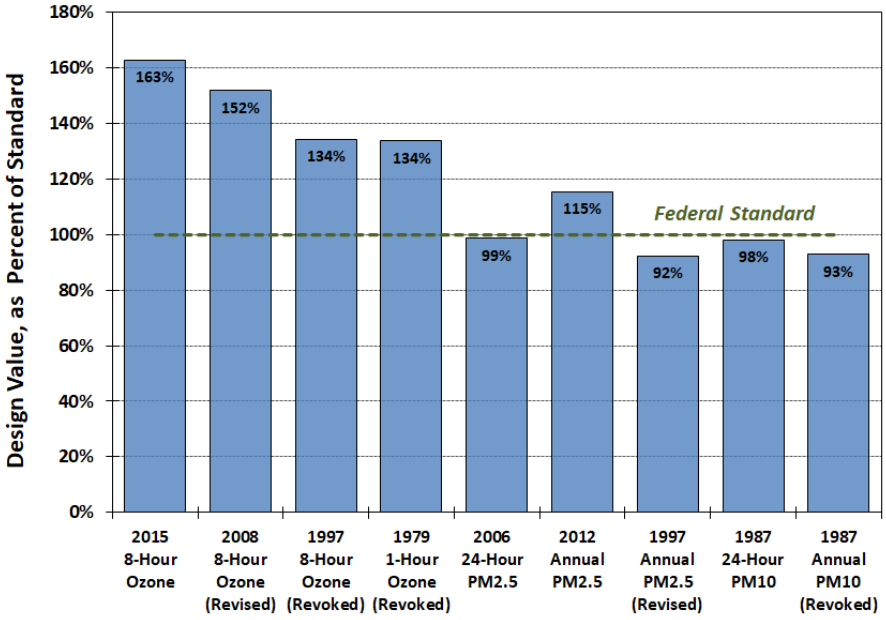


Figure G-12: South Coast Air Basin 2018–2020 3-Year Design Values for Ozone, PM_{10}, and $PM_{2.5}$

Table G-3: Maximum 2022 Design Values for CO, NO_2, Pb and SO_2 NAAQS

Pollutant	Averaging Time	NAAQS	Maximum Design Values (Station)	% of NAAQS
CO	8-hour	9 ppm	3.4 ppm (Compton)	38
NO_2	1-hour	0.100 ppm	0.08 ppm (Long Beach)	80
Pb	Annual	0.15 µg/m^3	0.06 µg/m^3 (Rehrig -Exide)	40
SO_2	1-hour	75 ppb	3 ppb (Los Angeles)	<1

Source: USEPA Interactive Design Value Tool, 2024

Notes: µg/m^3 =microgram per cubic meter; NAAQS = National Ambient Air Quality Standards; CO = carbon monoxide; NO_2 = nitrogen dioxide; ppb = parts per billion; ppm = parts per million; SO_2 = sulfur dioxide

Table G-4: 2020 Estimated Annual Average Emissions, Tons per Day, South Coast Air Basin

Source Type	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$	NH_3
Total Stationary Sources	907.8	90.0	85.0	43.9	9.3	27.1	18.7	13.2	22.4
Total Areawide Sources	199.8	141.9	58.1	23.1	0.4	273.3	143.4	35.6	36.8
Total Mobile Sources	190.4	168.7	1574.7	288.1	5.5	31.2	30.5	16.2	18.7
Total Natural Sources	187.5	161.7	255.0	5.9	2.2	27.2	26.2	22.2	6.5
Grand Total for South Coast Air Basin	**1485.5**	**562.3**	**1972.9**	**360.9**	**17.4**	**358.9**	**218.8**	**87.1**	**84.3**

Source: CEPAM2019v1.03 Emission Projection Data (California Air Resources Board, 2024); CO = carbon monoxide; NH3 = ammonia; NO_x = oxides of nitrogen; PM = particulate matter; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ROG = reactive organic gases; TOG = total organic compounds; SO_x = oxides of sulfur.

Table G-5: Top 10 HAPs Emitted in 2020 in Los Angeles and Orange Counties

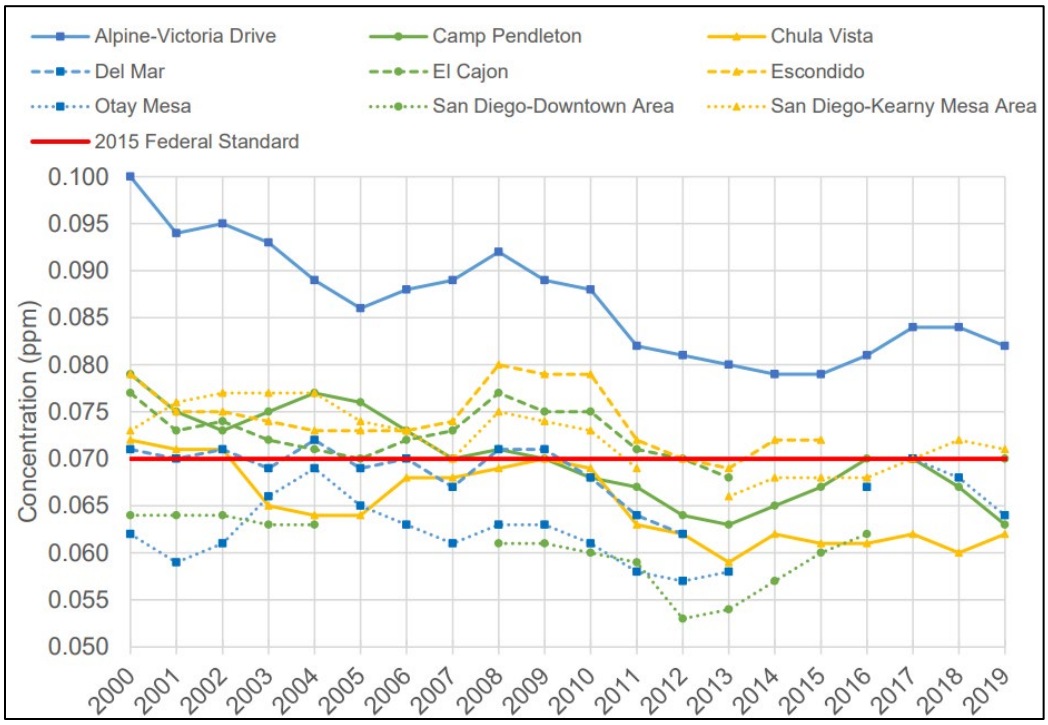
Pollutant	Percentage of Total HAP Emitted in 2020
Methanol	19%
Toluene	15%
Formaldehyde	14%
Xylenes (Mixed Isomers)	11%
Acetaldehyde	9%
Benzene	5%
Hexane	4%
Ethylene Glycol	3%
2,2,4-Trimethylpentane	3%
Ethylbenzene	2%

Source: USEPA 2020 NEI Data Retrieval Tool

G.1.7.3 San Diego Air Basin

Figure G-13 presents the San Diego County ozone design values compared to the 2015 ozone NAAQS from 2000 to 2019. Design values for the attainment criteria pollutants, obtained from USEPA's Interactive Design Value Tool, are presented in Table G-6. Table G-7 presents the estimated 2020 emissions inventory for the San Diego Air Basin in tons per day. In 2020, 10,163 tons of HAPs were emitted in San Diego County. Table G-8 presents the percentage of the top 10 HAPs, which comprise more than 88 percent of the total HAPs emitted. Similar to the SCAB, USEPA AirToxScreen data indicate

that formaldehyde, carbon tetrachloride, benzene, and acetaldehyde are the main drivers for cancer risk in this air basin.



Source: (San Diego County Air Pollution Control District, 2022)

Figure G-13: San Diego Air Basin Ozone Design Values, 2000–2019

Table G-6: Maximum 2022 Design Values for Attainment Pollutants in San Diego County

Pollutant	Averaging Time	NAAQS	Maximum Design Values (Station)	% of NAAQS
CO	8-hour	9 ppm	1.3 ppm (Rancho Carmel)	14
NO_2	1-hour	0.100 ppm	0.05 ppm (Donovan)	50
Pb	Annual	0.15 µg/m^3	0.02 µg/m^3 (Palomar Airport)	13
PM_{10}	24-hour	150 µg/m^3	4 µg/m^3 (Donovan)	<1
$PM_{2.5}$	• 24-hour	• 35 µg/m^3	• 30 µg m^3	• 86
	• Annual	• 9 µg/m^3	• 14.6 µg/m^3 (Donovan)	• 162
SO_2	1-hour	75 ppb	1 ppb (Carlsbad)	<1

Source: USEPA Interactive Design Value Tool, 2024

Notes: µg/m^3 =microgram per cubic meter; NAAQS = National Ambient Air Quality Standards; CO = carbon monoxide; mg/m^3= milligram per cubic meter; NO_2 = nitrogen dioxide; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ppm = parts per million; O_3 = ozone; SO_2 = sulfur dioxide

Table G-7: 2020 Estimated Annual Average Emissions, Tons per Day, San Diego Air Basin

Source Type	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$	NH_3
Total Stationary Sources	300.7	26.6	14.1	4.2	0.3	17.4	8.5	2.8	1.2
Total Areawide Sources	62.6	39.3	17.4	3.5	0.2	123.6	65.4	11.9	8.8
Total Mobile Sources	49.4	44.5	359.4	75.5	1.0	8.3	8.1	5.1	3.7
Total Natural Sources	91.8	80.2	110.1	4.5	1.5	13.3	12.8	10.8	2.7
Grand Total for San Diego Air Basin	**504.4**	**190.5**	**501.0**	**87.7**	**3.0**	**162.7**	**94.8**	**30.6**	**16.4**

Source: CEPAM2019v1.03 Emission Projection Data

Notes: CO = carbon monoxide; NH_3 = ammonia; NO_x = oxides of nitrogen; PM = particulate matter; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ROG = reactive organic gases; TOG = total organic compounds; SO_x = oxides of sulfur

Table G-8: Top Ten HAPs Emitted in 2020 in San Diego County

Pollutant	Percentage of Total HAP Emitted in 2020
Methanol	23%
Toluene	14%
Formaldehyde	14%
Xylenes (Mixed Isomers)	11%
Acetaldehyde	8%
Benzene	5%
Ethylene Glycol	3%
2,2,4-Trimethylpentane	3%
Hexane	3%
Ethylbenzene	2%

Source: USEPA 2020 NEI Data Retrieval Tool

G.1.7.3.1 San Diego Portside Environmental Justice Neighborhoods

Table G-9 summarizes the Sources of Criteria Pollutants in the Portside Community based on the 2018 emissions presented in the 2021 Community Emission Reductions Plan (CERP). Table G-10 presents selected TAC emissions by percentage and source, as presented in the 2021 CERP. These include Diesel PM, which the state has identified as a carcinogen, and hexavalent chromium, which can cause localized elevated cancer risk. Currently, Diesel PM is not identified as a HAP. Diesel PM from offroad and onroad mobile sources contributes 84 percent of cancer risk in the Portside Community. Diesel PM, manganese, nickel, and benzene are the largest contributors to non-cancer chronic risk. Nickel, benzene, formaldehyde, and acrolein are the largest contributors to non-cancer acute risk. The potential air quality impacts on the Portside Community that could result from implementing the proposed alternative will be analyzed in the Environmental Consequences section.

Table G-9: Sources of Criteria Pollutants in the Portside Community (2018 baseline)

Source Category	ROG	NO_X	PM_{10}	$PM_{2.5}$
Off-road mobile	317.8 (25.5%)	922.4 (63.1%)	36.2 (5.0%)	34.4 (17.7%)
On-road mobile	259.9 (20.8%)	462.8 (31.6%)	69.5 (9.5%)	32.1 (16.6%)
Stationary Source	215.1 (17.2%)	50.6 (3.5%)	33.2 (4.6%)	8.5 (4.4%)
Area Sources	455.0 (36.5%)	26.6 (1.8%)	589.2 (80.9%)	118.9 (61.3%)
Total, Tons per Year	**1,247.8**	**1,462.4**	**728.1**	**193.9**

Source: (San Diego County Air Pollution Control District, 2022)

Notes: NO_x = oxides of nitrogen; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ROG = reactive organic gases

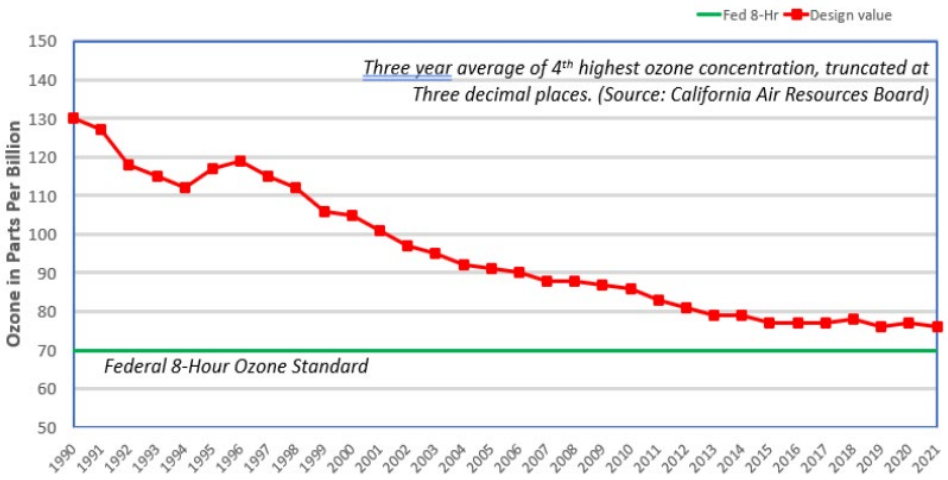
Table G-10: Portside Community Selected Toxic Air Contaminants, Pounds per Year

Source Category	*Arsenic*	*Benzene*	*1,3-Butadiene*	*Hexavalent chromium*	*DPM*
Off-road mobile	0.08 (0.2%)	17,196 (52.8%)	3,462 (63.3%)	0.56 (25.3%)	44,150 (78.0%)
On-road mobile	1.1 (2.9%)	14,601 (44.8%)	1,756 (32.2%)	0.21 (9.5%)	10,904 (19.3%)
Stationary Source	0.9 (2.4%)	409 (1.3%)	84 (1.5%)	1.40 (63.3%)	1,472 (2.7%)
Area Sources	37 (94.4%)	372 (1.1%)	164 (3.0%)	0.04 (1.8%)	0 (0%)
Total, Pounds per Year	39	32,578	5,466	2.21	56,526

Source: (Ventura County Air Pollution Control District, 2022)

G.1.7.4 South Central Coast Air Basin

Figure G-14 presents the Ventura County ozone design value for the 2015 eight-hour ozone NAAQS. Available design values for the attainment criteria pollutants, obtained from USEPA's Interactive Design Value Tool, are presented in Table G-11. Table G-12 presents the estimated 2020 emissions inventory for the South Central Coast Air Basin in tons per day. In 2020, 14,494 tons of HAPs were emitted in the South Central Coast Air Basin. Table G-13 presents the top 10 HAPs, which comprised 94 percent of the total HAPs emitted. USEPA AirToxScreen data indicate that formaldehyde, carbon tetrachloride, benzene, and acetaldehyde are the main drivers for cancer risk in this air basin.



Source: (Ventura County Air Pollution Control District, 2022)

Figure G-14: Ventura County APCD 2015 8-Hour Ozone Design Values

Table G-11: Maximum 2022 Design Values for Attainment Pollutants in Ventura County

Pollutant	Averaging Time	NAAQS	Maximum Design Values (Station)	% of NAAQS
NO_2	1-hour	0.100 ppm	0.03 ppm (Simi Valley)	30
PM_{10}	24-hour	150 µg/m^3	1 µg/m^3 (Oxnard)	<1
$PM_{2.5}$	24-hour	35 µg/m^3	21 µg m^3 (Thousand Oaks)	60
	Annual	9 µg/m^3	9.0 µg/m^3 (Ojai)	100

Source: USEPA Interactive Design Value Tool, 2024

Notes: µg/m^3 =microgram per cubic meter; NAAQS = National Ambient Air Quality Standards; CO = carbon monoxide; mg/m^3= milligram per cubic meter; NO_2 = nitrogen dioxide; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ppm = parts per million; O_3 = ozone; SO_2 = sulfur dioxide

Table G-12: 2020 Estimated Annual Average Emissions, Tons per Day, California South Central Coast Air Basin

Source Type	*TOG*	*ROG*	*CO*	*NO_X*	*SO_X*	*PM*	*PM_{10}*	*$PM_{2.5}$*	*NH_3*
Total Stationary Sources	106.7	20.6	8.2	7.1	0.8	2.9	1.6	0.9	2.7
Total Areawide Sources	54.9	29.6	44.6	3.1	0.2	71.9	38.7	10.5	9.0
Total Mobile Sources	24.9	22.7	184.9	27.5	0.7	3.5	3.4	2.0	1.6
Total Natural Sources	282.4	192.6	212.1	5.3	2.0	22.9	22.0	18.7	5.8
Grand Total for South Central Coast Air Basin	**468.9**	**265.5**	**449.9**	**42.9**	**3.6**	**101.2**	**65.8**	**32.0**	**19.0**

Source: CEPAM2019v1.03 Emission Projection Data

Notes: (1) Numbers may not add up due to rounding. (2) CO = carbon monoxide; NH_3 = ammonia; NO_x = oxides of nitrogen; PM = particulate matter; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ROG = reactive organic gases; TOG = total organic compounds; SO_x = oxides of sulfur

Table G-13: Top 10 HAPs Emitted in 2020 in South Central Air Basin

Pollutant	Percentage of Total HAP Emitted in 2020
Methanol	52%
Formaldehyde	14%
Acetaldehyde	10%
Toluene	6%
Xylenes (Mixed Isomers)	4%
Benzene	2%
2,2,4-Trimethylpentane	2%
Hexane	2%
Ethylene Glycol	1%
Ethylbenzene	1%

Source: USEPA 2020 NEI Data Retrieval Tool

G.1.7.5 North Central Coast Air Basin

Table G-14 presents the estimated 2020 emissions inventory for the North Central Coast Air Basin in tons per day. In 2020, 46,564 tons of HAPs were emitted in North Central Coast Air Basin. Table G-15 presents the top 10 HAPs that comprised 95 percent of the total HAPs emitted. USEPA AirToxScreen data indicate that formaldehyde is the main driver for cancer risk in this air basin.

Table G-14: 2020 Estimated Annual Average Emissions, Tons per Day, California North Central Coast Air Basin

Source Type	*TOG*	*ROG*	*CO*	*NO_X*	*SO_X*	*PM*	*PM_{10}*	*$PM_{2.5}$*	*NH_3*
Total Stationary Sources	266.8	10.9	12.6	17.4	1.0	8.7	4.8	1.7	2.1
Total Areawide Sources	47.8	22.8	22.4	1.7	0.1	75.6	38.3	8.2	10.7
Total Mobile Sources	13.1	11.9	96.9	13.5	0.1	1.5	1.5	0.9	0.7
Total Natural Sources	169.1	145.8	596.5	3.6	2.8	57.2	55.0	46.6	8.3
Grand Total for South Central Coast Air Basin	**496.8**	**191.4**	**728.4**	**36.2**	**4.1**	**143.0**	**99.5**	**57.4**	**21.8**

Source: CEPAM2019v1.03 Emission Projection Data; CO = carbon monoxide; NH_3 = ammonia; NO_x = oxides of nitrogen; PM = particulate matter; PM_{10} = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; ROG = reactive organic gases; TOG = total organic compounds; SO_x = oxides of sulfur.

Table G-15: Top 10 HAPs Emitted in 2020 in North Central Coast Air Basin

Pollutant	Percentage of Total HAP Emitted in 2020
Methanol	30%
Formaldehyde	24%
Acetaldehyde	16%
Acrolein	4%
Naphthalene	4%
Benzene	4%
Toluene	4%
Xylenes (Mixed Isomers)	3%
Acetonitrile	3%
1,3-Butadiene	2%

Source: USEPA 2020 NEI Data Retrieval

G.2 Emissions Estimates Spreadsheets

Tables G-16 through G-31 provide proposed changes to training and testing activities, emissions factors, and example emissions summaries for aircraft, vessels, and ordnance for the Baseline and Alternatives 1 and 2.

Table G-16: Proposed Changes to Training Activities

Category	Activity Name	VESSELS				AIRCRAFT				Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
		Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)									
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Anti-Submarine Warfare	Composite Training Unit Exercise – Strike Group Emissions analyzed as unit-level training (gunnery, missile exercise, etc.)															
Anti-Submarine Warfare	Rim of the Pacific Exercise Emissions analyzed as unit-level training (gunnery, missile exercise, etc.)															
Anti-Submarine Warfare	Task Force/Sustainment Exercise Emissions analyzed as unit-level training (gunnery, missile exercise, etc.)															
Anti-Submarine Warfare	Independent Deployer Certification Exercise/Tailored Surface Warfare Training	72	0%	5%	95%	36	0%	5%	95%	Navy/MC	NOCAL	0	1	1	1	1
Anti-Submarine Warfare	Independent Deployer Certification Exercise/Tailored Surface Warfare Training	72	0%	5%	95%	36	0%	5%	95%	Navy/MC	PMSR	0	1	1	1	1
Anti-Submarine Warfare	Independent Deployer Certification Exercise/Tailored Surface Warfare Training	72	0%	5%	95%	36	0%	5%	95%	Navy/MC	SCAB	0	6	8	6	8
Anti-Submarine Warfare	Independent Deployer Certification Exercise/Tailored Surface Warfare Training	72	0%	5%	95%	36	0%	5%	95%	Navy/MC	SDAB	0	6	8	6	8
Anti-Submarine Warfare	Medium Coordinated Anti-Submarine Warfare	24	0%	0%	100%	24	0%	0%	100%	Navy/MC	Hawaii	2	15	17	13	15
Anti-Submarine Warfare	Medium Coordinated Anti-Submarine Warfare	24	0%	0%	100%	24	0%	0%	100%	Navy/MC	SOCAL	2	10	13	8	11
Anti-Submarine Warfare	Small Coordinated Anti-Submarine Warfare	16	10%	10%	80%	16	10%	10%	80%	Navy/MC	Hawaii	2	1	1	-1	-1
Anti-Submarine Warfare	Small Coordinated Anti-Submarine Warfare	16	0%	0%	100%	16	0%	0%	100%	Navy/MC	SOCAL	12	7	9	-5	-3
Anti-Submarine Warfare	Composite Training Unit Exercise – Amphibious Ready Group/Marine Expeditionary Unit Emissions analyzed as unit-level training (gunnery, missile exercise, etc.)															
Anti-Submarine Warfare	Innovation and Demonstration Exercise	2	10%	10%	80%	2	10%	10%	80%	Navy/MC	Hawaii	0	1	1	1	1

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Anti-Submarine Warfare	Innovation and Demonstration Exercise	4	10%	10%	80%	4	10%	10%	80%	Navy/MC	PMSR	0	1	1	1	1
Anti-Submarine Warfare	Innovation and Demonstration Exercise	4	10%	10%	80%	4	10%	10%	80%	Navy/MC	SCI	0	1	1	1	1
Anti-Submarine Warfare	Innovation and Demonstration Exercise	4	10%	10%	80%	4	10%	10%	80%	Navy/MC	SDAB	0	1	1	1	1
Anti-Submarine Warfare	Innovation and Demonstration Exercise	4	0%	0%	100%	4	10%	10%	80%	Navy/MC	Transit Corridor	0	1	1	1	1
Anti-Submarine Warfare	Integrated Air Missile Defense Exercise	8	0%	0%	100%	8	0%	0%	100%	Navy/MC	Hawaii	0	1	1	1	1
Anti-Submarine Warfare	Large-Scale Amphibious Exercise	72	20%	40%	40%	36	80%	20%	0%	Navy/MC	Hawaii	0	1	1	1	1
Anti-Submarine Warfare	Large-Scale Amphibious Exercise	72	20%	40%	40%	36	80%	20%	0%	Navy/MC	SDAB	0	1	1	1	1
Anti-Submarine Warfare	Large-Scale Amphibious Exercise	72	20%	40%	40%	36	80%	20%	0%	Navy/MC	SCI	0	1	1	1	1
Anti-Submarine Warfare	Large-Scale Amphibious Exercise	72	20%	40%	40%	36	80%	20%	0%	Navy/MC	PMSR	0	1	1	1	1
Anti-Submarine Warfare	Multi-Warfare Exercise Emissions analyzed as unit-level training (gunnery, missile exercise, etc.)															
Air Warfare	Air Combat Maneuvers	1	0%	0%	100%	1	0%	0%	100%	Navy/MC	Hawaii	814	2314	2314	1500	1500
Air Warfare	Air Combat Maneuvers	1	0%	0%	100%	1	0%	0%	100%	Navy/MC	NOCAL	2000	3800	3800	1800	1800
Air Warfare	Air Combat Maneuvers	1	0%	0%	100%	1	0%	0%	100%	Navy/MC	PMSR	2000	3800	3800	1800	1800
Air Warfare	Air Combat Maneuvers					1	0%	0%	100%	Navy/MC	SOCAL	2000	3800	3800	1800	1800
Air Warfare	Air Combat Maneuvers	1	0%	0%	100%	1	0%	0%	100%	Air Force	Hawaii	272	272	272	0	0
Air Warfare	Air Defense Exercise	1	0%	0%	100%	2	0%	0%	100%	Navy/MC	Hawaii	185	50	50	-135	-135
Air Warfare	Air Defense Exercise	1	0%	0%	100%	2	0%	0%	100%	Navy/MC	NOCAL	183	183	183	0	0
Air Warfare	Air Defense Exercise	1	0%	0%	100%	2	0%	0%	100%	Navy/MC	PMSR	183	183	183	0	0
Air Warfare	Air Defense Exercise	1	0%	0%	100%	2	0%	0%	100%	Navy/MC	SOCAL	183	183	183	0	0
Air Warfare	High-Energy Laser Exercise Surface-to-Air	1	1%	4%	95%					Navy/MC	Hawaii	0	4	4	4	4
Air Warfare	High-Energy Laser Exercise Surface-to-Air	1	1%	4%	95%					Navy/MC	NOCAL	0	1	1	1	1
Air Warfare	High-Energy Laser Exercise Surface-to-Air	1	1%	4%	95%					Navy/MC	PMSR	0	1	1	1	1
Air Warfare	High-Energy Laser Exercise Surface-to-Air	1	1%	4%	95%					Navy/MC	SOCAL	0	1	1	1	1
Air Warfare	Gunnery Exercise Air-to-Air Medium-Caliber	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	Hawaii	0	2	3	2	3
Air Warfare	Gunnery Exercise Air-to-Air Medium-Caliber	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	SOCAL	5	2	2	-3	-3

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Air Warfare	Gunnery Exercise Air-to-Air Medium-Caliber	2	0%	0%	100%	2	0%	0%	100%	Air Force	Hawaii	0	12	12	12	12
Air Warfare	Gunnery Exercise Air-to-Air Small-Caliber	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	Hawaii	0	5	5	5	5
Air Warfare	Gunnery Exercise Air-to-Air Small-Caliber	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	SOCAL	0	5	5	5	5
Air Warfare	Gunnery Exercise Surface-to-Air Large-Caliber	2	0%	0%	100%					Navy/MC	Hawaii	51	25	25	-26	-26
Air Warfare	Gunnery Exercise Surface-to-Air Large-Caliber	2	0%	0%	100%					Navy/MC	SOCAL	165	55	55	-110	-110
Air Warfare	Gunnery Exercise Surface-to-Air Large-Caliber	2	0%	0%	100%					Coast Guard	Hawaii	15	15	15	0	0
Air Warfare	Gunnery Exercise Surface-to-Air Large-Caliber	2	0%	0%	100%					Coast Guard	SOCAL	45	45	45	0	0
Air Warfare	Gunnery Exercise Surface-to-Air Medium-Caliber	2	0%	0%	100%					Navy/MC	Hawaii	72	79	79	7	7
Air Warfare	Gunnery Exercise Surface-to-Air Medium-Caliber	2	0%	0%	100%					Navy/MC	SOCAL	195	85	85	-110	-110
Air Warfare	Gunnery Exercise Surface-to-Air Medium-Caliber	2	0%	0%	100%					Coast Guard	Hawaii	19	19	19	0	0
Air Warfare	Gunnery Exercise Surface-to-Air Medium-Caliber	2	0%	0%	100%					Coast Guard	SOCAL	70	70	70	0	0
Air Warfare	Medium Range Interceptor Capability Establishment of and impacts from land based firing points covered in separate NEPA. Not analyzed here.															
Air Warfare	Missile Exercise Air-to-Air	3	0%	0%	100%	3	0%	0%	100%	Navy/MC	Hawaii	62	28	28	-34	-34
Air Warfare	Missile Exercise Air-to-Air	3	0%	0%	100%	3	0%	0%	100%	Navy/MC	NOCAL	1	41	41	40	40
Air Warfare	Missile Exercise Air-to-Air	3	0%	0%	100%	3	0%	0%	100%	Navy/MC	SOCAL	2	41	41	39	39
Air Warfare	Missile Exercise Air-to-Air	3	0%	0%	100%	3	0%	0%	100%	Navy/MC	PMSR	1	41	41	40	40
Air Warfare	Missile Exercise Man-portable Air Defense System	2	0%	0%	100%					Navy/MC	SCI	4	10	10	6	6
Air Warfare	Missile Exercise Man-portable Air Defense System	2	0%	0%	100%					Navy/MC	PMRF	0	7	7	7	7
Air Warfare	Missile Exercise Man-portable Air Defense System	2	0%	0%	100%					Army	PMRF	0	2	2	2	2
Air Warfare	Missile Exercise Surface-to-Air	2	0%	0%	100%					Navy/MC	Hawaii	30	30	30	0	0
Air Warfare	Missile Exercise Surface-to-Air	2	0%	0%	100%					Navy/MC	PMSR	18	18	18	0	0
Air Warfare	Missile Exercise Surface-to-Air	2	0%	0%	100%					Navy/MC	SOCAL	18	18	18	0	0
Amphibious Warfare	Amphibious Assault	1	37.5%	37.5%	25.0%	1	100%	0%	0%	Navy/MC	Hawaii	12	48	48	36	36

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Amphibious Warfare	Amphibious Assault	1	37.5%	37.5%	25.0%	1	100%	0%	0%	Navy/MC	NOCAL	4	5	5	1	1
Amphibious Warfare	Amphibious Assault	1	37.5%	37.5%	25.0%	1	100%	0%	0%	Navy/MC	SDAB	5	5	5	0	0
Amphibious Warfare	Amphibious Assault	1	37.5%	37.5%	25.0%	1	100%	0%	0%	Navy/MC	SCAB	5	5	5	0	0
Amphibious Warfare	Amphibious Assault	1	37.5%	37.5%	25.0%	1	100%	0%	0%	Navy/MC	PMSR	4	5	5	1	1
Amphibious Warfare	Amphibious Operations in a Contested Environment	4	50%	25%	25%	4	50%	25%	25%	Navy/MC	Hawaii	0	15	15	15	15
Amphibious Warfare	Amphibious Operations in a Contested Environment	4	50%	25%	25%	4	50%	25%	25%	Navy/MC	SDAB - SSTC	0	5	5	5	5
Amphibious Warfare	Amphibious Operations in a Contested Environment	4	50%	25%	25%	4	50%	25%	25%	Navy/MC	SCAB	0	5	5	5	5
Amphibious Warfare	Amphibious Raid	2	50%	25%	25%	2	50%	25%	25%	Navy/MC	SDAB	2426	2404	2404	-22	-22
Amphibious Warfare	Amphibious Raid	2	50%	25%	25%	2	50%	25%	25%	Navy/MC	Hawaii	0	24	24	24	24
Amphibious Warfare	Amphibious Vehicle Maneuvers	4	50%	25%	25%					Navy/MC	Hawaii	0	20	20	20	20
Amphibious Warfare	Amphibious Vehicle Maneuvers	4	50%	25%	25%					Navy/MC	SCI	0	9	9	9	9
Amphibious Warfare	Amphibious Vehicle Maneuvers	4	50%	25%	25%					Navy/MC	PMSR	0	9	9	9	9
Amphibious Warfare	Amphibious Vehicle Maneuvers	4	50%	25%	25%					Navy/MC	NOCAL	0	9	9	9	9
Amphibious Warfare	Amphibious Vehicle Maneuvers	4	50%	25%	25%					Navy/MC	SDAB	0	9	9	9	9
Amphibious Warfare	Expeditionary Fires Exercise/Supporting Arms Coordination Exercise	72	0%	100%	0%	3	0%	100%	0%	Navy/MC	SDAB	4	4	4	0	0
Amphibious Warfare	Expeditionary Fires Exercise/Supporting Arms Coordination Exercise	72	0%	100%	0%	3	0%	100%	0%	Navy/MC	SCAB	4	4	4	0	0
Amphibious Warfare	Naval Surface Fire Support Exercise-At Sea	8	0%	0%	100%					Navy/MC	Hawaii	15	25	25	10	10
Amphibious Warfare	Naval Surface Fire Support Exercise – Land-Based Target	8	10%	60%	30%					Navy/MC	SOCAL	55	67	67	12	12
Amphibious Warfare	Non-Combat Amphibious Operation	12	50%	50%	0%	12	50%	50%	0%	Navy/MC	Hawaii	0	6	6	6	6
Amphibious Warfare	Non-Combat Amphibious Operation	12	50%	50%	0%	12	50%	50%	0%		NOCAL	1	1	1	0	0
Amphibious Warfare	Non-Combat Amphibious Operation	12	50%	50%	0%	12	50%	50%	0%		SCAB	1	1	1	0	0
Amphibious Warfare	Non-Combat Amphibious Operation	12	50%	50%	0%	12	50%	50%	0%		SDAB	1	1	1	0	0
Amphibious Warfare	Shore-to-Surface Artillery Exercise Shore based firing point impacts are addressed in other NEPA documentation.															

Category	Activity Name	VESSELS				AIRCRAFT				Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
		Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)									
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Amphibious Warfare	Shore-to-Surface Missile Exercise Shore based firing point impacts are addressed in other NEPA documentation.															
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Helicopter					2	0%	24%	76%	Navy/MC	Hawaii	6	5	5	-1	-1
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Helicopter					2	0%	24%	76%	Navy/MC	SCI	104	5	5	-99	-99
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft					6	0%	10%	90%	Navy/MC	Hawaii	10	80	80	70	70
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft					6	0%	10%	90%	Navy/MC	SCI	25	80	80	55	55
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Ship	8	0%	10%	90%					Navy/MC	Hawaii	50	34	34	-16	-16
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Ship	8	0%	10%	90%					Navy/MC	SCI	117	104	104	-13	-13
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Submarine	8	0%	10%	90%					Navy/MC	Hawaii	48	48	48	0	0
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Exercise – Submarine	8	0%	10%	90%					Navy/MC	SCI	13	26	26	13	13
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Helicopter	2	0%	24%	76%	2	0%	24%	76%	Navy/MC	Hawaii	159	130	130	-29	-29
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Helicopter	2	0%	24%	76%	2	0%	24%	76%	Navy/MC	SCI	262	65	65	-197	-197
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Helicopter	2	0%	24%	76%	2	0%	24%	76%	Navy/MC	PMSR	262	65	65	-197	-197
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Long-Range Unmanned Surface Vessel									Navy/MC	SCI					
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Long-Range Unmanned Surface Vessel									Navy/MC						
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft					6	0%	10%	90%	Navy/MC	Hawaii	32	200	200	168	168
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft					6	0%	10%	90%	Navy/MC	SCI	28	100	100	72	72
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft					6	0%	10%	90%	Navy/MC	PMSR	28	100	100	72	72
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Ship	2	0%	10%	90%					Navy/MC	Hawaii	224	119	119	-105	-105

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Ship	2	0%	10%	90%					Navy/MC	SCI	212	240	240	28	28
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Ship	2	0%	10%	90%					Navy/MC	PMSR	212	240	240	28	28
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Submarine	8	0%	10%	90%					Navy/MC	NOCAL	17	20	20	3	3
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Submarine	8	0%	10%	90%					Navy/MC	Hawaii	200	205	205	5	5
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Submarine	8	0%	10%	90%					Navy/MC	PMSR	17	20	20	3	3
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Submarine	8	0%	10%	90%					Navy/MC	SCI	17	24	24	7	7
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Exercise – Submarine	8	0%	10%	90%					Navy/MC	Transit Corridor	6	9	9	3	3
Anti-Submarine Warfare	Training and End-to-End Mission Capability Verification – Torpedo	8	0%	0%	100%	8	0%	0%	100%	Navy/MC	Hawaii	0	2	2	2	2
Anti-Submarine Warfare	Training and End-to-End Mission Capability Verification – Torpedo	8	0%	0%	100%	8	0%	0%	100%	Navy/MC	SOCAL	1	1	1	0	0
Electronic Warfare	Counter Targeting Chaff Exercise – Aircraft	2	0%	40%	60%	2	0%	40%	60%	Navy/MC	NOCAL	47	51	51	4	4
Electronic Warfare	Counter Targeting Chaff Exercise – Aircraft	2	0%	40%	60%	2	0%	40%	60%	Navy/MC	Hawaii	19	31	31	12	12
Electronic Warfare	Counter Targeting Chaff Exercise – Aircraft	2	0%	40%	60%	2	0%	40%	60%	Navy/MC	PMSR	47	51	51	4	4
Electronic Warfare	Counter Targeting Chaff Exercise – Aircraft	2	0%	40%	60%	2	0%	40%	60%	Navy/MC	SCI	47	51	51	4	4
Electronic Warfare	Counter Targeting Chaff Exercise – Ship	2	0%	0%	100%					Navy/MC	SOCAL	125	125	125	0	0
Electronic Warfare	Counter Targeting Chaff Exercise – Ship	2	0%	0%	100%					Coast Guard	Hawaii	5	5	5	0	0
Electronic Warfare	Counter Targeting Chaff Exercise – Ship	2	0%	0%	100%					Coast Guard	SOCAL	20	20	20	0	0
Electronic Warfare	Counter Targeting Flare Exercise	2	50%	50%	0%	2	50%	50%	0%	Navy/MC	Hawaii	19	108	108	89	89
Electronic Warfare	Counter Targeting Flare Exercise	2	50%	50%	0%	2	50%	50%	0%	Navy/MC	SCI	130	123	123	-7	-7
Electronic Warfare	Counter Targeting Flare Exercise	2	50%	50%	0%	2	50%	50%	0%	Coast Guard	SCI	10	10	10	0	0
Electronic Warfare	Electronic Warfare Operations	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	Hawaii	33	55	60	22	27
Electronic Warfare	Electronic Warfare Operations	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	NOCAL	117	109	109	-8	-8
Electronic Warfare	Electronic Warfare Operations	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	PMSR	117	109	109	-8	-8

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Electronic Warfare	Electronic Warfare Operations	2	0%	0%	100%	2	0%	0%	100%	Navy/MC	SOCAL	117	109	109	-8	-8
Expeditionary Warfare	Dive and Salvage Operations	1.0	100%	0%	0%					Navy/MC	Hawaii	12	18	18	6	6
Expeditionary Warfare	Dive and Salvage Operations	1.0	100%	0%	0%					Navy/MC	SCI	0	3	3	3	3
Expeditionary Warfare	Dive and Salvage Operations	1.0	100%	0%	0%					Navy/MC	SDAB	0	3	3	3	3
Expeditionary Warfare	Dive and Salvage Operations	1.0	100%	0%	0%					Navy/MC	Ventura	0	3	3	3	3
Expeditionary Warfare	Underwater Construction Team Training	12	100%	0%	0%					Coast Guard	Hawaii	8	8	8	0	0
Expeditionary Warfare	Underwater Construction Team Training	12	100%	0%	0%					Coast Guard	PMSR	262	262	262	0	0
Expeditionary Warfare	Underwater Construction Team Training	12	100%	0%	0%					Coast Guard	NOCAL	262	262	262	0	0
Expeditionary Warfare	Underwater Construction Team Training	1	100%	0%	0%					Coast Guard	SDAB	474	474	474	0	0
Expeditionary Warfare	Underwater Construction Team Training	1	100%	0%	0%					Coast Guard	SCAB	50	50	50	0	0
Expeditionary Warfare	Gunnery Exercise Ship-to-Shore	1.0	33%	33%	34%					Navy/MC	SCI	0	480	480	480	480
Expeditionary Warfare	Obstacle Loading	1.0	100%	0%	0%					Navy/MC	Hawaii	0	70	70	70	70
Expeditionary Warfare	Obstacle Loading	1.0	100%	0%	0%					Navy/MC	SCI	0	78	78	78	78
Expeditionary Warfare	Obstacle Loading	1.0	100%	0%	0%					Navy/MC	SDAB	0	78	78	78	78
Expeditionary Warfare	Personnel Insertion/ Extraction – Air	1.5	50%	40%	10%	1.5	50%	40%	10%	Navy/MC	Hawaii	0	534	534	534	534
Expeditionary Warfare	Personnel Insertion/ Extraction – Air	1.5	50%	40%	10%	1.5	50%	40%	10%	Navy/MC	SCI	0	389	389	389	389
Expeditionary Warfare	Personnel Insertion/ Extraction – Air	1.5	50%	40%	10%	1.5	50%	40%	10%	Navy/MC	SDAB	0	1166	1166	1166	1166
Expeditionary Warfare	Personnel Insertion/Extraction – Surface and Subsurface	1.5	100%	0%	0%					Navy/MC	Hawaii	182	336	336	154	154
Expeditionary Warfare	Personnel Insertion/Extraction – Surface and Subsurface	1.5	100%	0%	0%					Navy/MC	SCI	112	287	287	175	175
Expeditionary Warfare	Personnel Insertion/Extraction – Surface and Subsurface	1.5	100%	0%	0%					Navy/MC	SDAB	337	862	862	525	525
Expeditionary Warfare	Personnel Insertion/ Extraction – Swimmer/Diver	1.5	100%	0%	0%					Navy/MC	Hawaii	495	495	495	0	0
Expeditionary Warfare	Personnel Insertion/ Extraction – Swimmer/Diver	1.5	100%	0%	0%					Navy/MC	SCI	83	320	320	237	237
Expeditionary Warfare	Personnel Insertion/ Extraction – Swimmer/Diver	1.5	100%	0%	0%					Navy/MC	SDAB	248	960	960	712	712
Expeditionary Warfare	Small Boat Attack	6	10%	10%	80%					Navy/MC	Hawaii	6	6	6	0	0

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Expeditionary Warfare	Small Boat Attack	2	10%	10%	80%					Navy/MC	SCI	29	29	29	0	0
Expeditionary Warfare	Small Boat Attack	2	10%	10%	80%					Navy/MC	SDAB	86	86	86	0	0
Mine Warfare	Airborne Mine Countermeasure – Mine Detection					1.5	100%	0%	0%	Navy/MC	Hawaii	0	20	20	20	20
Mine Warfare	Airborne Mine Countermeasure – Mine Detection					1.5	100%	0%	0%	Navy/MC	SCAB	5	10	10	5	5
Mine Warfare	Airborne Mine Countermeasure – Mine Detection					1.5	100%	0%	0%	Navy/MC	SDAB - SSTC	5	10	10	5	5
Mine Warfare	Airborne Mine Laying					1	10%	40%	50%	Navy/MC	Hawaii	0			0	0
Mine Warfare	Airborne Mine Laying					1	10%	40%	50%	Navy/MC	SCAB	9	3	3	-6	-6
Mine Warfare	Airborne Mine Laying					1	10%	40%	50%	Navy/MC	SDAB	9	3	3	-6	-6
Mine Warfare	Amphibious Breaching Operations	3	80%	20%	0%					Navy/MC	Hawaii	0	100	100	100	100
Mine Warfare	Amphibious Breaching Operations	3	80%	20%	0%					Navy/MC	SDAB	0	484	484	484	484
Mine Warfare	Amphibious Breaching Operations	3	80%	20%	0%					Navy/MC	SCI	0	161	161	161	161
Mine Warfare	Civilian Port Defense –Homeland Security Anti-Terrorism/Force Protection Exercise	24	100%	0%	0%	12	100%	0%	0%	Navy/MC	Hawaii	1	4	4	3	3
Mine Warfare	Civilian Port Defense –Homeland Security Anti-Terrorism/Force Protection Exercise	24	100%	0%	0%	12	100%	0%	0%	Navy/MC	SCAB	1	1	1	0	0
Mine Warfare	Civilian Port Defense –Homeland Security Anti-Terrorism/Force Protection Exercise	24	100%	0%	0%	12	100%	0%	0%	Navy/MC	SDAB	1	1	1	0	0
Mine Warfare	Civilian Port Defense –Homeland Security Anti-Terrorism/Force Protection Exercise	24	100%	0%	0%	12	100%	0%	0%	Navy/MC	NOCAL	1	1	1	0	0
Mine Warfare	Civilian Port Defense –Homeland Security Anti-Terrorism/Force Protection Exercise	24	100%	0%	0%	12	100%	0%	0%	Navy/MC	Ventura	1	1	1	0	0
Mine Warfare	Mine Countermeasure Exercise – Ship Sonar	1.5	0%	62%	38%					Navy/MC	Hawaii	30	72	72	42	42
Mine Warfare	Mine Countermeasure Exercise – Ship Sonar	1.5	0%	62%	38%					Navy/MC	SCAB	46	128	128	82	82
Mine Warfare	Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicle					1.5	75%	25%	0%	Navy/MC	Hawaii	6	8	8	2	2

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Mine Warfare	Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicle					1.5	75%	25%	0%	Navy/MC	SCI	124	11	11	-113	-113
Mine Warfare	Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicle					1.5	75%	25%	0%	Navy/MC	SDAB - SSTC	124	11	11	-113	-113
Mine Warfare	Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicle					1.5	75%	25%	0%	Navy/MC	SCAB	124	11	11	-113	-113
Mine Warfare	Mine Countermeasures – Towed Mine Neutralization					2	100%	0%	0%	Navy/MC	SCI	170	15	15	-155	-155
Mine Warfare	Mine Countermeasures – Towed Mine Neutralization					2	100%	0%	0%	Navy/MC	SDAB	170	15	15	-155	-155
Mine Warfare	Mine Neutralization Explosive Ordnance Disposal	1.5	75%	25%	0%					Navy/MC	Hawaii	20	15	15	-5	-5
Mine Warfare	Mine Neutralization Explosive Ordnance Disposal	1.5	75%	25%	0%					Navy/MC	SCAB	65	144	144	79	79
Mine Warfare	Mine Neutralization Explosive Ordnance Disposal	1.5	75%	25%	0%					Navy/MC	SDAB	65	144	144	79	79
Mine Warfare	Mine Neutralization Explosive Ordnance Disposal	1.5	75%	25%	0%					Navy/MC	Ventura	65	144	144	79	79
Mine Warfare	Submarine Mine Avoidance Exercise															
Mine Warfare	Submarine Mobile Mine and Mine Laying Exercise	6	100%	0%	0%	6	100%	0%	0%	Navy/MC	Hawaii	1	20	20	19	19
Mine Warfare	Submarine Mobile Mine and Mine Laying Exercise	6	100%	0%	0%	6	100%	0%	0%	Navy/MC	SCI	1	15	15	14	14
Mine Warfare	Submarine Mobile Mine and Mine Laying Exercise	6	100%	0%	0%	6	100%	0%	0%	Navy/MC	PMSR	1	15	15	14	14
Mine Warfare	Surface Ship Object Detection	1	50%	25%	25%					Navy/MC	Hawaii	42	72	72	30	30
Mine Warfare	Surface Ship Object Detection	1	50%	25%	25%					Navy/MC	SDAB	164	256	256	92	92
Mine Warfare	Training and End-to-End Mission Capability Verification – Mobile Mine and Mine															
Mine Warfare	Underwater Demolition Qualification and Certification	8	100%	0%	0%					Navy/MC	Hawaii	25	5	5	-20	-20
Mine Warfare	Underwater Demolition Qualification and Certification	8	100%	0%	0%					Navy/MC	SDAB	120	44	44	-76	-76

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Mine Warfare	Underwater Demolitions Multiple Charge – Large Area Clearance	8	100%	0%	0%					Navy/MC	SCI	18	6	6	-12	-12
Mine Warfare	Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation	2	100%	0%	0%					Navy/MC	Hawaii	0	6	6	6	6
Mine Warfare	Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation	2	100%	0%	0%					Navy/MC	SDAB	0	279	279	279	279
Mine Warfare	Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation	2	100%	0%	0%					Navy/MC	SCAB	0	93	93	93	93
Surface Warfare	Bombing Exercise Air-to-Surface	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	Hawaii	187	194	194	7	7
Surface Warfare	Bombing Exercise Air-to-Surface	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	NOCAL	320	331	331	11	11
Surface Warfare	Bombing Exercise Air-to-Surface	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	SDAB	160	166	166	6	6
Surface Warfare	Bombing Exercise Air-to-Surface	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	SCAB	160	166	166	6	6
Surface Warfare	Gunnery Exercise Air-to-Surface Medium Caliber	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	Hawaii	217	201	201	-16	-16
Surface Warfare	Gunnery Exercise Air-to-Surface Medium Caliber	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	SDAB	182	240	240	58	58
Surface Warfare	Gunnery Exercise Air-to-Surface Medium Caliber	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	SCAB	182	240	240	58	58
Surface Warfare	Gunnery Exercise Air-to-Surface Medium Caliber	1	0%	50%	50%	1	0%	50%	50%	Coast Guard	Hawaii	100	100	100	0	0
Surface Warfare	Gunnery Exercise Air-to-Surface Medium Caliber	1	0%	50%	50%	1	0%	50%	50%	Coast Guard	SDAB	60	60	60	0	0
Surface Warfare	Gunnery Exercise Air-to-Surface Medium Caliber	1	0%	50%	50%	1	0%	50%	50%	Coast Guard	SCAB	60	60	60	0	0
Surface Warfare	Gunnery Exercise Air-to-Surface Small Caliber	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	Hawaii	585	429	429	-156	-156
Surface Warfare	Gunnery Exercise Air-to-Surface Small Caliber	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	SDAB	1020	345	345	-675	-675
Surface Warfare	Gunnery Exercise Air-to-Surface Small Caliber	1	0%	50%	50%	1	0%	50%	50%	Navy/MC	SCAB	1020	345	345	-675	-675
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Navy/MC	Hawaii	10	10	10	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Navy/MC	SDAB	7	7	7	0	0

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Navy/MC	SCI	7	7	7	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Coast Guard	Hawaii	2	2	2	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Coast Guard	SDAB	79	79	79	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Coast Guard	SCI	79	79	79	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Medium Caliber	1	0%	20%	80%					Army	Hawaii	0	4	8	4	8
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Navy/MC	Hawaii	25	31	31	6	6
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Navy/MC	SDAB - SSTC	100	173	173	73	73
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Navy/MC	SCI	100	173	173	73	73
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Coast Guard	Hawaii	100	100	100	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Coast Guard	SDAB - SSTC	63	63	63	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Coast Guard	PMSR	63	63	63	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Coast Guard	NOCAL	63	63	63	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Boat Small Caliber	1	0%	20%	80%					Army	Hawaii	0	4	8	4	8
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Navy/MC	Hawaii	32	32	32	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Navy/MC	SDAB	100	63	63	-37	-37
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Navy/MC	SCAB	100	63	63	-37	-37
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	0%	100%					Navy/MC	Transit Corridor	13	13	13	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Coast Guard	Hawaii	5	5	5	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Coast Guard	SDAB	8	8	8	0	0

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Coast Guard	PMSR	8	8	8	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Large Caliber	3	0%	28%	72%					Coast Guard	NOCAL	8	8	8	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Navy/MC	Hawaii	50	50	50	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Navy/MC	SDAB	45	45	45	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Navy/MC	SCAB	45	45	45	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Navy/MC	PMSR	45	45	45	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Navy/MC	NOCAL	45	45	45	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	0%	100%					Navy/MC	Transit Corridor	40	40	40	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Coast Guard	Hawaii	20	20	20	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Coast Guard	SCI	18	18	18	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Medium Caliber	2	0%	28%	72%					Coast Guard	SDAB	18	18	18	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	2	0%	28%	72%					Navy/MC	Hawaii	65	65	65	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	1	0%	28%	72%					Navy/MC	SCI	142	142	142	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	1	0%	28%	72%					Navy/MC	PMSR	142	142	142	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	1	0%	28%	72%					Navy/MC	NOCAL	71	71	71	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	1	0%	0%	100%					Navy/MC	Transit Corridor	20	20	20	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	2	0%	28%	72%					Coast Guard	Hawaii	100	100	100	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	1	0%	28%	72%					Coast Guard	SCI	165	165	165	0	0
Surface Warfare	Gunnery Exercise Surface-to-Surface Ship Small Caliber	1	0%	28%	72%					Coast Guard	NOCAL	55	55	55	0	0

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Surface Warfare	Laser Targeting – Aircraft					2	0%	0%	100%	Navy/MC	Hawaii	50	100	100	50	50
Surface Warfare	Laser Targeting – Aircraft					2	0%	50%	50%	Navy/MC	SDAB	455	50	50	-405	-405
Surface Warfare	Laser Targeting – Aircraft					2	0%	50%	50%	Navy/MC	SCAB	455	50	50	-405	-405
Surface Warfare	Laser Targeting – Ship	2	0%	0%	100%					Navy/MC	Hawaii	0	4	4	4	4
Surface Warfare	Laser Targeting – Ship	2	0%	50%	50%					Navy/MC	SDAB	0	2	2	2	2
Surface Warfare	Laser Targeting – Ship	2	0%	50%	50%					Navy/MC	SCAB	0	2	2	2	2
Surface Warfare	Laser Targeting – Ship	2	0%	0%	100%					Coast Guard	Hawaii	4	4	4	0	0
Surface Warfare	Laser Targeting – Ship	2	0%	50%	50%					Coast Guard	SDAB	2	2	2	0	0
Surface Warfare	Laser Targeting – Ship	2	0%	50%	50%					Coast Guard	SCAB	2	2	2	0	0
Surface Warfare	Maritime Security Operations	2	10%	10%	80%	2	33%	33%	34%	Navy/MC	Hawaii	70	70	70	0	0
Surface Warfare	Maritime Security Operations	2	0%	0%	100%	2	33%	33%	34%	Navy/MC	NOCAL	63	63	63	0	0
Surface Warfare	Maritime Security Operations	2	0%	0%	100%	2	33%	33%	34%	Navy/MC	SOCAL	188	188	188	0	0
Surface Warfare	Maritime Security Operations	2	10%	10%	80%	2	33%	33%	34%	Coast Guard	Hawaii	145	145	145	0	0
Surface Warfare	Maritime Security Operations	2	0%	0%	100%	2	33%	33%	34%	Coast Guard	NOCAL	89	89	89	0	0
Surface Warfare	Maritime Security Operations	2	0%	0%	100%	2	33%	33%	34%	Coast Guard	SOCAL	798	798	798	0	0
Surface Warfare	Missile Exercise Air-to-Surface	1	0%	0%	100%	1	0%	0%	100%	Navy/MC	Hawaii	10	22	22	12	12
Surface Warfare	Missile Exercise Air-to-Surface	1	0%	0%	100%	1	0%	50%	50%	Navy/MC	PMSR	70	33	33	-37	-37
Surface Warfare	Missile Exercise Air-to-Surface	1	0%	0%	100%	1	0%	50%	50%	Navy/MC	SDAB	70	33	33	-37	-37
Surface Warfare	Missile Exercise Air-to-Surface	1	0%	0%	100%	1	0%	50%	50%	Navy/MC	SCAB	70	33	33	-37	-37
Surface Warfare	Missile Exercise Air-to-Surface Rocket	1	0%	0%	100%	1	0%	0%	100%	Navy/MC	Hawaii	227	129	129	-98	-98
Surface Warfare	Missile Exercise Air-to-Surface Rocket	1	0%	0%	100%	1	0%	50%	50%	Navy/MC	PMSR	122	135	135	13	13
Surface Warfare	Missile Exercise Air-to-Surface Rocket	1	0%	0%	100%	1	0%	50%	50%	Navy/MC	SDAB	62	68	68	6	6
Surface Warfare	Missile Exercise Air-to-Surface Rocket	1	0%	0%	100%	1	0%	50%	50%	Navy/MC	SCAB	62	68	68	6	6
Surface Warfare	Missile Exercise Surface-to-Surface	11	0%	0%	100%	11	0%	0%	100%	Navy/MC	Hawaii	20	32	32	12	12
Surface Warfare	Missile Exercise Surface-to-Surface	11	0%	0%	100%	11	0%	0%	100%	Navy/MC	SOCAL	10	10	10	0	0
Surface Warfare	Sinking Exercise (SINKEX)	16	0%	0%	100%	16	0%	0%	100%	Navy/MC	Hawaii	1	3	3	2	2
Surface Warfare	Sinking Exercise (SINKEX)	16	0%	0%	100%	16	0%	0%	100%	Navy/MC	SOCAL	0	1	1	1	1
Surface Warfare	Surface Warfare Torpedo Exercise – Submarine	8	10%	10%	80%					Navy/MC	Hawaii	0	30	30	30	30
Surface Warfare	Surface Warfare Torpedo Exercise – Submarine	8	0%	0%	100%					Navy/MC	SOCAL	0	10	10	10	10

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Surface Warfare	Training and End-to-End Mission Capability Verification – Submarine Missile Maritime	4	0%	0%	100%					Navy/MC	Hawaii	0	2	2	2	2
Surface Warfare	Training and End-to-End Mission Capability Verification – Submarine Missile Maritime	4	0%	0%	100%					Navy/MC	SOCAL	0	3	3	3	3
Other Training Exercises	Aerial Firefighting					8	100%			Navy/MC	Hawaii	0			0	0
Other Training Exercises	Aerial Firefighting	8	100%			8	100%			Navy/MC	SCI	0	4	4	4	4
Other Training Exercises	At-Sea Vessel Refueling Training	2	33%	33%	34%					Navy/MC	SDAB	0	5	5	5	5
Other Training Exercises	At-Sea Vessel Refueling Training	2	33%	33%	34%					Navy/MC	SCAB	0	5	5	5	5
Other Training Exercises	Combat Swimmer/Diver Training and Certification	4	100%							Navy/MC	Hawaii	0	395	395	395	395
Other Training Exercises	Combat Swimmer/Diver Training and Certification	4	100%	0%	0%					Navy/MC	SDAB - SSTC	0	320	320	320	320
Other Training Exercises	Installation and Maintenance of Subsea and Seabed Warfare Training Areas	2	100%							Navy/MC	Hawaii	0	4	4	4	4
Other Training Exercises	Installation and Maintenance of Subsea and Seabed Warfare Training Areas	2	100%							Navy/MC	PMSR	0	2	2	2	2
Other Training Exercises	Installation and Maintenance of Subsea and Seabed Warfare Training Areas	2	100%							Navy/MC	SCI	0	2	2	2	2
Other Training Exercises	Kilo Dip					0.3	0%	24%	76%	Navy/MC	Hawaii	60	30	30	-30	-30
Other Training Exercises	Kilo Dip					0.3	0%	24%	76%	Navy/MC	SDAB	1200	15	15	-1185	-1185
Other Training Exercises	Kilo Dip					0.3	0%	24%	76%	Navy/MC	SCAB	1200	15	15	-1185	-1185
Other Training Exercises	Multi-Domain Unmanned Autonomous Systems	2	100%	0%	0%	2	100%	0%	0%	Navy/MC	Hawaii	0	100	100	100	100
Other Training Exercises	Multi-Domain Unmanned Autonomous Systems	2	100%	0%	0%	2	100%	0%	0%	Navy/MC	SCI	0	100	100	100	100
Other Training Exercises	Multi-Domain Unmanned Autonomous Systems	2	100%	0%	0%	2	100%	0%	0%	Navy/MC	SDAB	0	100	100	100	100
Other Training Exercises	Port Damage Repair									Navy/MC	Ventura	0	6	6	6	6
Other Training Exercises	Precision Anchoring	4	100%	0%	0%					Navy/MC	Hawaii	20	20	20	0	0
Other Training Exercises	Precision Anchoring	4	100%	0%	0%					Navy/MC	SDAB	75	48	48	-27	-27
Other Training Exercises	Precision Anchoring	4	100%	0%	0%					Coast Guard	Hawaii	9	9	9	0	0
Other Training Exercises	Precision Anchoring	4	100%	0%	0%					Coast Guard	SDAB	950	950	950	0	0
Other Training Exercises	Search and Rescue	2	40%	40%	20%	2	40%	40%	20%	Coast Guard	Hawaii	110	110	110	0	0

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Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Other Training Exercises	Search and Rescue	2	40%	40%	20%	2	40%	40%	20%	Coast Guard	SDAB	522	522	522	0	0
Other Training Exercises	Search and Rescue	2	40%	40%	20%	2	40%	40%	20%	Coast Guard	SCAB	58	58	58	0	0
Other Training Exercises	Ship-to-Shore Fuel Transfer Training	12	100%	0%	0%					Navy/MC	Hawaii	0	4	4	4	4
Other Training Exercises	Ship-to-Shore Fuel Transfer Training	12	100%	0%	0%					Navy/MC	SDAB - SSTC	0	3	3	3	3
Other Training Exercises	Ship-to-Shore Fuel Transfer Training	12	100%	0%	0%					Navy/MC	SCI	0	3	3	3	3
Other Training Exercises	Submarine Navigation Exercise	4	100%	0%	0%					Navy/MC	Hawaii	220	220	220	0	0
Other Training Exercises	Submarine Navigation Exercise	4	100%	0%	0%					Navy/MC	SDAB - SSTC	80	80	80	0	0
Other Training Exercises	Submarine Sonar Maintenance and Systems Checks	4	33%	33%	34%					Navy/MC	Hawaii	520	520	520	0	0
Other Training Exercises	Submarine Sonar Maintenance and Systems Checks	4	33%	33%	34%					Navy/MC	SDAB	62	62	62	0	0
Other Training Exercises	Submarine Sonar Maintenance and Systems Checks	4	33%	33%	34%					Navy/MC	SCAB	62	62	62	0	0
Other Training Exercises	Submarine Sonar Maintenance and Systems Checks	4	33%	33%	34%					Navy/MC	PMSR	61	62	62	1	1
Other Training Exercises	Submarine Sonar Maintenance and Systems Checks	4	33%	33%	34%					Navy/MC	Transit Corridor	10	10	10	0	0
Other Training Exercises	Submarine Under Ice Training and Certification	4	0%	0%	100%					Navy/MC	Hawaii	12	12	12	0	0
Other Training Exercises	Submarine Under Ice Training and Certification	4	0%	0%	100%					Navy/MC	CA	6	6	6	0	0
Other Training Exercises	Submarine and UUV Subsea and Seabed Warfare Exercise	4	33%	33%	34%					Navy/MC	Hawaii	0	20	20	20	20
Other Training Exercises	Submarine and UUV Subsea and Seabed Warfare Exercise	4	33%	33%	34%					Navy/MC	NOCAL	0	6	6	6	6
Other Training Exercises	Submarine and UUV Subsea and Seabed Warfare Exercise	4	33%	33%	34%					Navy/MC	SDAB	0	8	8	8	8
Other Training Exercises	Submarine and UUV Subsea and Seabed Warfare Exercise	4	33%	33%	34%					Navy/MC	PMSR	0	6	6	6	6
Other Training Exercises	Surface Ship Sonar Maintenance and Systems Checks	4	33%	33%	34%					Navy/MC	Hawaii	155	155	155	0	0
Other Training Exercises	Surface Ship Sonar Maintenance and Systems Checks	4	100%	0%	0%					Navy/MC	SDAB	500	500	500	0	0

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Other Training Exercises	Surface Ship Sonar Maintenance and Systems Checks	4	0%	0%	100%					Navy/MC	Transit Corridor	8	8	8	0	0
Other Training Exercises	Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors	4	0%	0%	100%					Navy/MC	Hawaii	0	20	20	20	20
Other Training Exercises	Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors	4	0%	0%	100%					Navy/MC	NOCAL	0	6	6	6	6
Other Training Exercises	Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors	4	0%	0%	100%					Navy/MC	SOCAL	0	8	8	8	8
Other Training Exercises	Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors	4	0%	0%	100%					Navy/MC	PMSR	0	6	6	6	6
Other Training Exercises	Training and End-to-End Mission Capability Verification – Unmanned Aerial Vehicle (UAV)	4	0%	0%	100%					Navy/MC	Hawaii	0	10	10	10	10
Other Training Exercises	Training and End-to-End Mission Capability Verification – Unmanned Aerial Vehicle (UAV)	4	0%	0%	100%					Navy/MC	NOCAL	0	3	3	3	3
Other Training Exercises	Training and End-to-End Mission Capability Verification – Unmanned Aerial Vehicle (UAV)	4	0%	0%	100%					Navy/MC	SOCAL	0	4	4	4	4
Other Training Exercises	Training and End-to-End Mission Capability Verification – Unmanned Aerial Vehicle (UAV)	4	0%	0%	100%					Navy/MC	PMSR	0	3	3	3	3
Other Training Exercises	Underwater Survey	4	100%	0%	0%					Navy/MC	Hawaii	0	60	60	60	60
Other Training Exercises	Underwater Survey	4	100%	0%	0%					Navy/MC	SDAB	0	180	180	180	180
Other Training Exercises	Underwater Survey	4	100%	0%	0%					Navy/MC	SCI	0	180	180	180	180
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Navy/MC	Hawaii	20	234	234	214	214
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Navy/MC	SOCAL	4	48	48	44	44
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Navy/MC	NOCAL	2	24	24	22	22

		VESSELS				AIRCRAFT										
Category	Activity Name	Time on Range (hr)	Activity Distribution (%)			Time on Range (hr)	Distribution (%)			Service	Location	Current Activities	Proposed Annual # of Events		Difference in Annual # of Events	
			0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore				ALT 1	ALT 2	ALT 1	ALT 2
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Navy/MC	PMSR	4	48	48	44	44
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Navy/MC	Transit Corridor	0	3	3	3	3
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Coast Guard	Hawaii	50	50	50	0	0
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Coast Guard	SOCAL	140	140	140	0	0
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Coast Guard	NOCAL	70	70	70	0	0
Other Training Exercises	Unmanned Aerial System Training and Certification	4	0%	0%	100%	6	0%	0%	100%	Coast Guard	PMSR	140	140	140	0	0
Other Training Exercises	Unmanned Underwater Vehicle Training – Certification and Development Exercises	4	50%	25%	25%	2	50%	25%	25%	Navy/MC	Hawaii	25	278	278	253	253
Other Training Exercises	Unmanned Underwater Vehicle Training – Certification and Development Exercises	4	50%	25%	25%	2	50%	25%	25%	Navy/MC	SCI	3	222	222	219	219
Other Training Exercises	Unmanned Underwater Vehicle Training – Certification and Development Exercises	4	50%	25%	25%	2	50%	25%	25%	Navy/MC	SDAB - SSTC	8	666	666	658	658
Other Training Exercises	Unmanned Underwater Vehicle Training – Certification and Development Exercises	8	50%	25%	25%					Coast Guard	Hawaii	200	200	200	0	0
Other Training Exercises	Unmanned Underwater Vehicle Training – Certification and Development Exercises	4	50%	25%	25%					Coast Guard	SCI	60	60	60	0	0
Other Training Exercises	Unmanned Underwater Vehicle Training – Certification and Development Exercises	4	50%	25%	25%					Coast Guard	SDAB - SSTC	250	250	250	0	0
Other Training Exercises	Waterborne Training	4	50%	25%	25%					Navy/MC	Hawaii	500	30	30	-470	-470
Other Training Exercises	Waterborne Training	4	50%	25%	25%					Navy/MC	SDAB	0	536	536	536	536
Other Training Exercises	Waterborne Training	4	50%	25%	25%					Navy/MC	SCAB	0	179	179	179	179
Other Training Exercises	Waterborne Training	4	50%	25%	25%					Coast Guard	Hawaii	69	69	69	0	0
Other Training Exercises	Waterborne Training	4	50%	25%	25%					Coast Guard	SDAB	300	300	300	0	0
Other Training Exercises	Waterborne Training	4	50%	25%	25%					Coast Guard	SCAB	136	136	136	0	0

Table G-17: Proposed Changes to Testing Activities

		VESSELS				AIRCRAFT										
			Distribution (%)				Distribution (%)						Proposed Annual # of Events		Difference in Annual # of Events	
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Air Warfare	Air Combat Maneuver Test	3	0%	0%	100%	3	0%	0%	100%	NAVAIR	Hawaii	22	24	24	2	2
Air Warfare	Air Combat Maneuver Test	3	0%	0%	100%	3	0%	0%	100%	NAVAIR	PMSR	55	200	200	145	145
Air Warfare	Air Combat Maneuver Test	3	0%	0%	100%	3	0%	0%	100%	NAVAIR	SOCAL	55	121	121	66	66
Air Warfare	Air Platform – Vehicle Test					4	0%	0%	100%	NAVAIR	Hawaii	0	8	8	8	8
Air Warfare	Air Platform – Vehicle Test					4	0%	0%	100%	NAVAIR	SOCAL	35	54	54	19	19
Air Warfare	Air Platform Weapons Integration Test					2	0%	0%	100%	NAVAIR	Hawaii	0	11	11	11	11
Air Warfare	Air Platform Weapons Integration Test					2	0%	0%	100%	NAVAIR	SOCAL	10	11	11	1	1
Air Warfare	Air-to-Air Missile Test					2	0%	0%	100%	NAVAIR	PMSR	0	49	49	49	49
Air Warfare	Intelligence, Surveillance, and Reconnaissance Test					6	0.0%	0%	100%	NAVAIR	Hawaii	14	15	15	1	1
Air Warfare	Intelligence, Surveillance, and Reconnaissance Test					6	0.0%	0%	100%	NAVAIR	SOCAL	254	279	279	25	25
Air Warfare	Large Force Test Event	6	0.0%	0.0%	100.0%	6	0.0%	0%	100%	NAVAIR	SOCAL	0	6	42	6	42
Air Warfare	Surface-to-Air Gunnery Test – Large Caliber	2	0%	0%	100%					NAVAIR	PMSR	0	12	12	12	12
Air Warfare	Surface-to-Air Gunnery Test – Medium Caliber	2	0%	0%	100%					NAVAIR	PMSR	0	12	12	12	12
Air Warfare	Surface-to-Air High-Energy Laser Test	2	0%	0%	100%					NAVAIR	PMSR	0	50	50	50	50
Air Warfare	Surface-to-Air High-Power Microwave Test	2	0%	0%	100%					NAVAIR	PMSR	0	75	75	75	75
Air Warfare	Surface-to-Air Missile Test	2	0%	0%	100%					NAVAIR	PMSR	0	155	155	155	155
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Test (Rotary-Wing)					2	0.0%	24%	76.0%	NAVAIR	Hawaii	0	73	73	73	73
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Test (Rotary-Wing)					2	0.0%	24%	76.0%	NAVAIR	SCI	44	73	73	29	29
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Test (Rotary-Wing)					2	0.0%	24%	76.0%	NAVAIR	SOCAL	44	73	73	29	29

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Test (Aircraft)					6	10%	40%	50.0%	NAVAIR	Hawaii	20	26	26	6	6
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Test (Aircraft)					6	10%	40%	50.0%	NAVAIR	SCI	28	39	39	11	11
Anti-Submarine Warfare	Anti-Submarine Warfare Torpedo Test (Aircraft)					6	10%	40%	50.0%	NAVAIR	SOCAL	28	39	39	11	11
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Test (Fixed-Wing)					6	0.0%	10%	90.0%	NAVAIR	Hawaii	58	67	67	9	9
Anti-Submarine Warfare	Anti-Submarine Warfare Tracking Test (Fixed-Wing)					6	0.0%	10%	90.0%	NAVAIR	SOCAL	63	75	75	12	12
Anti-Submarine Warfare	Kilo Dip Test					1.5	0.0%	24%	76.0%	NAVAIR	Hawaii	0	7	7	7	7
Anti-Submarine Warfare	Kilo Dip Test					1.5	0.0%	24%	76.0%	NAVAIR	SOCAL	0	7	7	7	7
Anti-Submarine Warfare	Sonobuoy Lot Acceptance Test					6	100%	0%	0.0%	NAVAIR	Hawaii	0	38	38	38	38
Anti-Submarine Warfare	Sonobuoy Lot Acceptance Test					6	100%	0%	0.0%	NAVAIR	SOCAL	160	352	352	192	192
Anti-Submarine Warfare	Anti-Submarine Warfare Mission Package Testing					3.6	0.0%	24%	76.0%	NAVSEA	Hawaii	22	1	1	-21	-21
Anti-Submarine Warfare	Anti-Submarine Warfare Mission Package Testing					3.6	0.0%	24%	76.0%	NAVSEA	SCI	23	1	1	-22	-22
Anti-Submarine Warfare	At-Sea Sonar Testing					10	0.0%	0%	100%	NAVSEA	Hawaii	17	11	11	-6	-6
Anti-Submarine Warfare	At-Sea Sonar Testing					10	0.0%	0%	100%	NAVSEA	SCI	21	43	43	22	22
Anti-Submarine Warfare	Pierside Sonar Testing	2	100%	0.0%	0.0%					NAVSEA	Hawaii	7	24	24	17	17
Anti-Submarine Warfare	Pierside Sonar Testing	2	100%	0.0%	0.0%					NAVSEA	SCI					
Anti-Submarine Warfare	Pierside Sonar Testing	2	100%	0.0%	0.0%					NAVSEA	SDAB	7	75	76	68	69
Anti-Submarine Warfare	Surface Ship Sonar Testing/Maintenance	2	90.0%	5.0%	5.0%					NAVSEA	Hawaii	17	6	6	-11	-11
Anti-Submarine Warfare	Surface Ship Sonar Testing/Maintenance	2	90.0%	5.0%	5.0%					NAVSEA	SDAB	6	6	6	0	0
Anti-Submarine Warfare	Torpedo (Explosive) Testing	12	0.0%	0.0%	100%	8	0.0%	0%	100%	NAVSEA	Hawaii	8	2	2	-6	-6

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
		Time on Range (hr)	Distribution (%)			Time on Range (hr)	Distribution (%)									
Category	Activity Name		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Anti-Submarine Warfare	Torpedo (Explosive) Testing	12	0.0%	0.0%	100%	8	0.0%	0%	100%	NAVSEA	SOCAL	10	2	2	-8	-8
Anti-Submarine Warfare	Torpedo (Non-Explosive) Testing	12	0.0%	0.0%	100%	8	0.0%	0%	100%	NAVSEA	Hawaii	13	8	8	-5	-5
Anti-Submarine Warfare	Torpedo (Non-Explosive) Testing	12	0.0%	0.0%	100%	8	0.0%	0%	100%	NAVSEA	SOCAL	13	9	9	-4	-4
Electronic Warfare	Radar and Other System Testing					12	0.0%	0%	100%	NAVSEA	Hawaii	10	25	25	15	15
Electronic Warfare	Radar and Other System Testing					12	0.0%	0%	100%	NAVSEA	PMSR	24	22	22	-2	-2
Electronic Warfare	Radar and Other System Testing					12	0.0%	0%	100%	NAVSEA	SCI	24	22	22	-2	-2
Electronic Warfare	Chaff Test					3	0.0%	0%	100%	NAVAIR	Hawaii	5	11	11	6	6
Electronic Warfare	Chaff Test					3	0.0%	0%	100%	NAVAIR	PMSR	10	10	10	0	0
Electronic Warfare	Chaff Test					3	0.0%	0%	100%	NAVAIR	SOCAL	10	21	21	11	11
Electronic Warfare	Electronic Systems Test					6	0.0%	62%	38.0%	NAVAIR	Hawaii	0	4	4	4	4
Electronic Warfare	Electronic Systems Test					6	0.0%	62%	38.0%	NAVAIR	PMSR	2	200	200	198	198
Electronic Warfare	Electronic Systems Test					6	0.0%	62%	38.0%	NAVAIR	SOCAL	2	4	4	2	2
Electronic Warfare	Flare Test					2	0.0%	0%	100%	NAVAIR	Hawaii	5	11	11	6	6
Electronic Warfare	Flare Test					2	0.0%	0%	100%	NAVAIR	PMSR	8	10	10	2	2
Electronic Warfare	Flare Test					2	0.0%	0%	100%	NAVAIR	SOCAL	8	21	21	13	13
Mine Warfare	Airborne Dipping Sonar Minehunting Test					2.5	50%	30%	20.0%	NAVAIR	Hawaii	0	20	20	20	20
Mine Warfare	Airborne Dipping Sonar Minehunting Test					2.5	50%	30%	20.0%	NAVAIR	SCAB	3	10	10	7	7
Mine Warfare	Airborne Dipping Sonar Minehunting Test					2.5	50%	30%	20.0%	NAVAIR	SDAB	3	10	10	7	7
Mine Warfare	Airborne Laser Mine Detection System Test					2	50%	30%	20.0%	NAVAIR	Hawaii	0	22	22	22	22
Mine Warfare	Airborne Laser Mine Detection System Test					2	50%	30%	20.0%	NAVAIR	SCAB	10	11	11	1	1
Mine Warfare	Airborne Laser Mine Detection System Test					2	50%	30%	20.0%	NAVAIR	SDAB	10	11	11	1	1
Mine Warfare	Airborne Mine Neutralization System Test					2	50%	30%	20.0%	NAVAIR	Hawaii	0	39	39	39	39
Mine Warfare	Airborne Mine Neutralization System Test					2	50%	30%	20.0%	NAVAIR	SCAB	11	42	42	31	31

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Mine Warfare	Airborne Mine Neutralization System Test					2	50%	30%	20.0%	NAVAIR	SDAB	11	42	42	31	31
Mine Warfare	Airborne Sonobuoy Minehunting Test					2	50%	30%	20.0%	NAVAIR	Hawaii	0	10	10	10	10
Mine Warfare	Airborne Sonobuoy Minehunting Test					2	50%	30%	20.0%	NAVAIR	SCAB	3	5	5	2	2
Mine Warfare	Airborne Sonobuoy Minehunting Test					2	50%	30%	20.0%	NAVAIR	SDAB	3	5	5	2	2
Mine Warfare	Mine Laying Test					1	50%	30%	20.0%	NAVAIR	Hawaii	1	1	1	0	0
Mine Warfare	Mine Laying Test					1	50%	30%	20.0%	NAVAIR	SCAB	1	1	1	0	0
Mine Warfare	Mine Laying Test					1	50%	30%	20.0%	NAVAIR	SDAB	1	1	1	0	0
Mine Warfare	Mine Countermeasure and Neutralization Testing	8	50.0%	30.0%	20.0%	8	50%	30%	20.0%	NAVSEA	SCAB	6	23	23	17	17
Mine Warfare	Mine Countermeasure and Neutralization Testing	8	50.0%	30.0%	20.0%	8	50%	30%	20.0%	NAVSEA	SDAB	6	23	23	17	17
Mine Warfare	Mine Countermeasure Mission Package Testing					5	50%	30%	20.0%	NAVSEA	Hawaii	19	16	16	-3	-3
Mine Warfare	Mine Countermeasure Mission Package Testing					5	50%	30%	20.0%	NAVSEA	PMSR	19	9	9	-10	-10
Mine Warfare	Mine Countermeasure Mission Package Testing					5	50%	30%	20.0%	NAVSEA	SDAB - SSTC	19	9	9	-10	-10
Mine Warfare	Mine Countermeasure Mission Package Testing					5	50%	30%	20.0%	NAVSEA	SCI	19	9	9	-10	-10
Mine Warfare	Mine Detection and Classification Testing	12	50.0%	30.0%	20.0%	8	50%	30%	20.0%	NAVSEA	Hawaii	3	10	10	7	7
Mine Warfare	Mine Detection and Classification Testing	12	50.0%	30.0%	20.0%	8	50%	30%	20.0%	NAVSEA	PMSR	4	7	7	3	3
Mine Warfare	Mine Detection and Classification Testing	12	50.0%	30.0%	20.0%	8	50%	30%	20.0%	NAVSEA	SDAB	4	7	7	3	3
Mine Warfare	Mine Detection and Classification Testing	12	50.0%	30.0%	20.0%	8	50%	30%	20.0%	NAVSEA	SCI	4	7	7	3	3
Surface Warfare	Air-to-Surface Bombing Test					3	0.0%	50%	50.0%	NAVAIR	Hawaii	8	9	9	1	1
Surface Warfare	Air-to-Surface Bombing Test					3	0.0%	50%	50.0%	NAVAIR	PMSR	5	52	52	47	47
Surface Warfare	Air-to-Surface Bombing Test					3	0.0%	50%	50.0%	NAVAIR	SDAB	5	8	8	3	3
Surface Warfare	Air-to-Surface Bombing Test					3	0.0%	50%	50.0%	NAVAIR	SCAB	5	7	7	2	2

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Surface Warfare	Air-to-Surface Gunnery Test					2	0.0%	50%	50.0%	NAVAIR	Hawaii	6	7	7	1	1
Surface Warfare	Air-to-Surface Gunnery Test					2	0.0%	50%	50.0%	NAVAIR	PMSR	16	10	10	-6	-6
Surface Warfare	Air-to-Surface Gunnery Test					2	0.0%	50%	50.0%	NAVAIR	SDAB	16	33	33	17	17
Surface Warfare	Air-to-Surface Gunnery Test					2	0.0%	50%	50.0%	NAVAIR	SCI	16	33	33	17	17
Surface Warfare	Air-to-Surface High-Energy Laser Test					2	0.0%	0%	100%	NAVAIR	Hawaii	54	59	59	5	5
Surface Warfare	Air-to-Surface High-Energy Laser Test					2	0.0%	0%	100.0%	NAVAIR	PMSR	18	270	270	252	252
Surface Warfare	Air-to-Surface High-Energy Laser Test					2	0.0%	0%	100.0%	NAVAIR	SDAB	18	30	30	12	12
Surface Warfare	Air-to-Surface High-Energy Laser Test					2	0.0%	0%	100.0%	NAVAIR	SCI	18	29	29	11	11
Surface Warfare	Air-to-Surface High-Power Microwave Test					2	0.0%	0%	100.0%	NAVAIR	PMSR	0	25	25	25	25
Surface Warfare	Air-to-Surface Laser Targeting Test					2	0.0%	50%	50.0%	NAVAIR	Hawaii	0	6	6	6	6
Surface Warfare	Air-to-Surface Laser Targeting Test					2	0.0%	50%	50.0%	NAVAIR	SDAB	3	3	3	0	0
Surface Warfare	Air-to-Surface Laser Targeting Test					2	0.0%	50%	50.0%	NAVAIR	SCI	2	3	3	1	1
Surface Warfare	Air-to-Surface Missile Test					2	0.0%	0%	100.0%	NAVAIR	Hawaii	18	20	20	2	2
Surface Warfare	Air-to-Surface Missile Test					2	0.0%	0%	100.0%	NAVAIR	PMSR	27	186	186	159	159
Surface Warfare	Air-to-Surface Missile Test					2	0.0%	0%	100.0%	NAVAIR	SOCAL	27	8	8	-19	-19
Surface Warfare	Long-Range Weapons Delivery Systems (OTH)/ Hypersonic Vehicle Test					2	0.0%	0%	100.0%	NAVAIR	PMSR	0	36	36	36	36
Surface Warfare	Long-Range Weapons Delivery Systems (OTH)/ Hypersonic Vehicle Test					2	0.0%	0%	100.0%	NAVAIR	SOCAL	0	10	10	10	10
Surface Warfare	Rocket Test					2	0.0%	50%	50.0%	NAVAIR	Hawaii	2	2	2	0	0
Surface Warfare	Rocket Test					2	0.0%	50%	50.0%	NAVAIR	PMSR	6	8	8	2	2
Surface Warfare	Rocket Test					2	0.0%	50%	50.0%	NAVAIR	SCAB	6	12	12	6	6
Surface Warfare	Rocket Test					2	0.0%	50%	50.0%	NAVAIR	SDAB	6	12	12	6	6
Surface Warfare	Subsurface-to-Surface Missile Test	2	0.0%	0.0%	100.0%					NAVAIR	PMSR	0	4	4	4	4

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Surface Warfare	Surface-to-Surface Gunnery Test – Large-Caliber	2.5	0.0%	100%	0.0%					NAVAIR	PMSR	0	10	10	10	10
Surface Warfare	Surface-to-Surface Gunnery Test – Medium-Caliber	2.5	0.0%	100%	0.0%					NAVAIR	PMSR	0	26	26	26	26
Surface Warfare	Surface-to-Surface Gunnery Test – Small-Caliber	2.5	0.0%	100%	0.0%					NAVAIR	PMSR	0	10	10	10	10
Surface Warfare	Surface-to-Surface High-Energy Laser Test	1	0.0%	50.0%	50.0%	1	0.0%	50%	50.0%	NAVAIR	PMSR	54	50	50	-4	-4
Surface Warfare	Surface-to-Surface High-Power Microwave Test	1	0.0%	50.0%	50.0%					NAVAIR	PMSR	0	25	25	25	25
Surface Warfare	Surface-to-Surface Missile Test	3	0.0%	50.0%	50.0%					NAVAIR	PMSR	0	44	44	44	44
Surface Warfare	Gun Testing – Large Caliber	2.5	0.0%	100%	0.0%					NAVSEA	PMSR	16	11	11	-5	-5
Surface Warfare	Gun Testing – Large Caliber	2.5	0.0%	100%	0.0%					NAVSEA	SDAB	16	11	11	-5	-5
Surface Warfare	Gun Testing – Large Caliber	2.5	0.0%	100%	0.0%					NAVSEA	SCAB	16	11	11	-5	-5
Surface Warfare	Gun Testing – Medium Caliber	2.5	0.0%	100%	0.0%					NAVSEA	SDAB	16	7	7	-9	-9
Surface Warfare	Gun Testing – Medium Caliber	2.5	0.0%	100%	0.0%					NAVSEA	SCAB	16	7	7	-9	-9
Surface Warfare	Gun Testing – Small Caliber	2.5	0.0%	100%	0.0%					NAVSEA	SDAB	8	3	3	-5	-5
Surface Warfare	Gun Testing – Small Caliber	2.5	0.0%	100%	0.0%					NAVSEA	SCAB	8	3	3	-5	-5
Surface Warfare	Missile and Rocket Testing	3	0.0%	50.0%	50.0%					NAVSEA	Hawaii	27	1	1	-26	-26
Surface Warfare	Missile and Rocket Testing	3	0.0%	50.0%	50.0%					NAVSEA	PMSR	11	79	79	78	79
Surface Warfare	Missile and Rocket Testing	3	0.0%	50.0%	50.0%					NAVSEA	SDAB	11	79	79	78	79
Surface Warfare	Missile and Rocket Testing	3	0.0%	50.0%	50.0%					NAVSEA	SCAB	11	79	79	78	80
Other Testing Activities	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	NAVAIR	Hawaii	2	2	2	0	0
Other Testing Activities	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	NAVAIR	SDAB	0	2	2	2	2

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
		Time on Range (hr)	Distribution (%)			Time on Range (hr)	Distribution (%)									
Category	Activity Name		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Other Testing Activities	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	NAVSEA	Hawaii	0	6	6	6	6
Other Testing Activities	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	NAVAIR	SCAB	0	1	1	1	1
Other Testing Activities	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	NAVSEA	SDAB	0	2	2	2	2
Other Testing Activities	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	NAVSEA	SCAB	0	2	2	2	2
Other Testing Activities	Air Platform Shipboard Integration Test					6	0.0%	0%	100%	NAVAIR	Hawaii	7	8	8	1	1
Other Testing Activities	Air Platform Shipboard Integration Test					6	0.0%	0%	100%	NAVAIR	SOCAL	110	150	150	40	40
Other Testing Activities	Undersea Range System Test	2	0.0%	0.0%	100%					NAVAIR	Hawaii	21	33	33	12	12
Other Testing Activities	Undersea Range System Test	2	0.0%	0.0%	100%					NAVAIR	SOCAL	0	21	21	21	21
Other Testing Activities	Undersea Range System Testing	2	0.0%	0.0%	100%					EXWC	PMSR	0	6	6	6	6
Other Testing Activities	Undersea Range System Testing	2	0.0%	0.0%	100%					EXWC	SOCAL	0	6	6	6	6
Other Testing Activities	Countermeasure Testing	2	0.0%	0.0%	100%					NAVSEA	Hawaii	0	4	4	4	4
Other Testing Activities	Countermeasure Testing	2	0.0%	0.0%	100%					NAVSEA	SOCAL	13	14	14	1	1
Other Testing Activities	Insertion/Extraction	2	33.0%	33.0%	34.0%					NAVSEA	Hawaii	1	2	2	1	1
Other Testing Activities	Insertion/Extraction	2	0.0%	0.0%	100%					NAVSEA	SOCAL	5	2	2	-3	-3
Other Testing Activities	Non-Acoustic Component Testing	2	0.0%	0.0%	100%	2	0.0%	0%	100%	NAVSEA	SOCAL	17	4	4	-13	-13
Other Testing Activities	Semi-Stationary Equipment Testing									NAVSEA						
Other Testing Activities	Simulant Testing	8	0.0%	0.0%	100%	8	0.0%	0%	100%	NAVSEA	SOCAL	220	5	5	-215	-215
Other Testing Activities	Underwater Search, Deployment, and Recovery									EXWC						
Other Testing Activities	Communications	8	100%	0.0%	0.0%					NIWC	Hawaii	0	4	4	4	4

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Other Testing Activities	Communications	8	100%	0.0%	0.0%					NIWC	SCI	5	4	4	-1	-1
Other Testing Activities	Communications	8	100%	0.0%	0.0%					NIWC	SDAB	5	4	4	-1	-1
Other Testing Activities	Intelligence, Surveillance, Reconnaissance	6	0.0%	0.0%	100%	6	0.0%	0%	100%	NIWC	Hawaii	13	6	6	-7	-7
Other Testing Activities	Intelligence, Surveillance, Reconnaissance	6	0.0%	0.0%	100%	6	0.0%	0%	100%	NIWC	SCI	17	96	96	79	79
Other Testing Activities	Intelligence, Surveillance, Reconnaissance	6	0.0%	0.0%	100%	6	0.0%	0%	100%	NIWC	SDAB - SSTC	17	96	96	79	79
Other Testing Activities	Intelligence, Surveillance, Reconnaissance	6	0.0%	0.0%	100%	6	0.0%	0%	100%	NIWC	SDAB	17	96	96	82	96
Other Testing Activities	Vehicle Testing	6	100%	0.0%	0.0%					NIWC	Hawaii	4	23	23	19	19
Other Testing Activities	Vehicle Testing	6	100%	0.0%	0.0%					NIWC	SCI	83	26	26	-57	-57
Other Testing Activities	Vehicle Testing	6	100%	0.0%	0.0%					NIWC	SDAB	83	26	26	-57	-57
Other Testing Activities	Vehicle Testing	6	100%	0.0%	0.0%					NIWC	Transit Corridor	2	7	7	5	5
Vessel Evaluation	Air Defense Testing	2	0.0%	0.0%	100%	2	0.0%	0%	100%	NAVSEA	Hawaii	4	4	4	0	0
Vessel Evaluation	Air Defense Testing	2	0.0%	0.0%	100%	2	0.0%	0%	100%	NAVSEA	PMSR	5	14	14	9	9
Vessel Evaluation	Air Defense Testing	2	0.0%	0.0%	100%	2	0.0%	0%	100%	NAVSEA	SOCAL	5	14	14	9	9
Vessel Evaluation	In-Port Maintenance Testing	8	100%	0.0%	0.0%					NAVSEA	Hawaii	18	5	5	-13	-13
Vessel Evaluation	In-Port Maintenance Testing	8	100%	0.0%	0.0%					NAVSEA	PMSR	9	8	8	-1	-1
Vessel Evaluation	In-Port Maintenance Testing	8	100%	0.0%	0.0%					NAVSEA	SDAB	9	8	8	-1	-1
Vessel Evaluation	Propulsion Testing	4	0.0%	0.0%	100%					NAVSEA	Hawaii	8	41	41	33	33
Vessel Evaluation	Propulsion Testing	4	0.0%	0.0%	100%					NAVSEA	SOCAL	18	23	23	5	5
Vessel Evaluation	Signature Analysis Operations	4	100%	0.0%	0.0%					NAVSEA	Hawaii	2	4	4	2	2
Vessel Evaluation	Signature Analysis Operations	4	100%	0.0%	0.0%					NAVSEA	SDAB	1	1	1	0	0
Vessel Evaluation	Small Ship Shock Trial	4	0.0%	0.0%	100%	4	0.0%	0%	100%	NAVSEA	SOCAL	1	1	1	0	0
Vessel Evaluation	Submarine Sea Trials – Weapons System Testing	2	0.0%	0.0%	100%					NAVSEA	Hawaii	1	4	4	3	3

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
		Time on Range (hr)	Distribution (%)			Time on Range (hr)	Distribution (%)									
Category	Activity Name		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore		0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Vessel Evaluation	Submarine Sea Trials – Weapons System Testing	2	0.0%	0.0%	100%					NAVSEA	SOCAL	1	4	4	3	3
Vessel Evaluation	Surface Warfare Testing	2	0.0%	0.0%	100%					NAVSEA	Hawaii	45	16	16	-29	-29
Vessel Evaluation	Surface Warfare Testing	2	0.0%	0.0%	100%					NAVSEA	SOCAL	26	27	27	1	1
Vessel Evaluation	Surface Warfare Testing	2	0.0%	0.0%	100%					NAVSEA	PMSR	26	27	27	1	1
Vessel Evaluation	Undersea Warfare Testing	2	0.0%	0.0%	100%	2	0.0%	0%	100%	NAVSEA	Hawaii	16	13	13	-3	-3
Vessel Evaluation	Undersea Warfare Testing	2	0.0%	0.0%	100%	2	0.0%	0%	100%	NAVSEA	SOCAL	20	60	60	40	40
Vessel Evaluation	Vessel Signature Evaluation	2	100%	0.0%	0.0%					NAVSEA	PMSR	22	3	3	-19	-19
Vessel Evaluation	Vessel Signature Evaluation	4	100%	0.0%	0.0%					NAVSEA	SCI	22	3	3	-19	-19
Unmanned Systems	Ocean Energy and Cable System Research	2	33.0%	33.0%	34.0%					EXWC	Hawaii	0	4	4	4	4
Unmanned Systems	Ocean Energy and Cable System Research	2	33.0%	33.0%	34.0%					EXWC	SOCAL	0	6	6	6	6
Unmanned Systems	Unmanned Surface Vehicle System Testing	2.5	100%	0.0%	0.0%					NAVSEA	PMSR	0	5	5	5	5
Unmanned Systems	Unmanned Surface Vehicle System Testing	2.5	100%	0.0%	0.0%					NAVSEA	SCI	0	5	5	5	5
Unmanned Systems	Unmanned Underwater Vehicle Testing	2.5	100%	0.0%	0.0%					NAVSEA	Hawaii	3	2	2	-1	-1
Unmanned Systems	Unmanned Underwater Vehicle Testing	2.5	100%	0.0%	0.0%					NAVSEA	SDAB	146	343	343	197	197
Unmanned Systems	Unmanned Underwater Vehicle Testing	2.5	100%	0.0%	0.0%					NAVSEA	SCAB	146	343	343	197	197
Acoustic and Oceanographic Science and Technology	Acoustic, Oceanographic, and Energy Research	2	100%	0.0%	0.0%					NIWC	Hawaii	0	2	2	2	2
Acoustic and Oceanographic Science and Technology	Acoustic, Oceanographic, and Energy Research	2	100%	0.0%	0.0%					NIWC	SCI	0	60	60	60	60
Acoustic and Oceanographic Science and Technology	Acoustic, Oceanographic, and Energy Research	2	100%	0.0%	0.0%					NIWC	SDAB	0	60	60	60	60

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Acoustic and Oceanographic Science and Technology	Acoustic, Oceanographic, and Energy Research	2	100%	0.0%	0.0%					NIWC	PMSR	0	60	60	60	60
Acoustic and Oceanographic Science and Technology	Large Displacement Unmanned Undersea Vehicle Testing	2	0.0%	62.0%	38.0%					ONR	Hawaii	2	3	3	1	1
Acoustic and Oceanographic Science and Technology	Large Displacement Unmanned Undersea Vehicle Testing	2	0.0%	62.0%	38.0%					ONR	SDAB	1	3	3	2	2
Acoustic and Oceanographic Science and Technology	Large Displacement Unmanned Undersea Vehicle Testing	2	0.0%	62.0%	38.0%					ONR	SCAB	1	3	3	2	2
Acoustic and Oceanographic Science and Technology	Large Displacement Unmanned Undersea Vehicle Testing	2	0.0%	62.0%	38.0%					ONR	NOCAL	1	3	3	2	2
Acoustic and Oceanographic Science and Technology	Long Range Acoustic Communications	2	0.0%	62.0%	38.0%					ONR	Hawaii	3	2	2	-1	-1
Acoustic and Oceanographic Science and Technology	Mine Countermeasure Technology Research									ONR						
Acoustic and Oceanographic Science and Technology	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	ONR	Hawaii	2	5	5	3	3
Acoustic and Oceanographic Science and Technology	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	ONR	SDAB	0	3	3	3	3
Acoustic and Oceanographic	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	ONR	SCAB	0	3	3	3	3

		VESSELS				AIRCRAFT							Proposed Annual # of Events		Difference in Annual # of Events	
			Distribution (%)				Distribution (%)									
Category	Activity Name	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Time on Range (hr)	0-3 nm from shore	3-12 nm from Shore	>12 nm from Shore	Service	Location	Current Activities	ALT 1	ALT 2	ALT 1	ALT 2
Science and Technology																
Acoustic and Oceanographic Science and Technology	Acoustic and Oceanographic Research	8	0.0%	62.0%	38.0%	8	0.0%	62%	38.0%	ONR	NOCAL	0	3	3	3	3

Table G-18: Aircraft Emission Factors

							Emission Indices, lb/1,000 lb fuel							Emissions Factors (lb/hr)						References
Aircraft	Engine Model	# of Engines	Fuel Flow (lb/hr) /Engine	Fuel Flow (lb/hr) /Total	Fuel Flow (gal/hr)	Mode	CO	NO_x	HC	VOC	SO_x	PM	CO_2	CO	NO_x	VOC	SO_x	PM	CO_2	Source of Emissions Indices Information
AH-1W	T700-GE-401C (2)	2	406	850	127	Cruise	10.54	5.55	0.56	0.64	0.37	4.20	3216.27	8.96	4.72	0.55	0.30	3.57	2,734	AESO MEMORANDUM REPORT NO. 9824 Revision C, November 2015, Table 2
C-130 F/R/T	T56-A-16 Turboprop	4	1,125	4,500	672	circle	2.07	8.16	0.47	0.54	0.37	3.97	3213.00	9.32	36.72	2.43	1.67	17.87	14,459	AESO Memorandum Report No. 2000-09D, December 2015.
CH-53	T64-GE-415 (3)	3	1,488	4,464	666	Cruise	2.13	8.08	0.15	0.17	0.37	2.21	3221.35	9.51	36.07	0.77	1.65	9.87	14,380	AESO Memorandum Report No. 9822, Revision D, November 2009.
CH-60	T700-GE-401C	2	600	1,200	179	Cruise	6.25	6.40	0.55	0.63	0.37	4.20	3221.23	7.50	7.68	0.76	0.44	5.04	3,865	AESO Memorandum Report No. 9929 Revision D December 2019 Table 2 VOC = THC x 1.15
E-2 / E-2C	T56-A-425, -427 (2)	2	1,133	2,266	338	approach	2.54	10.04	-	0.36	0.37	0.94	3251.78	5.76	22.75	0.82	0.84	2.13	7,369	AESO Memorandum Report No. 9943E, September 2015
EA-18G	F414-GE-400 (2)	2	5,169	10,338	1543	approach	0.72	14.75	0.12	0.14	0.37	6.56	3191.30	7.44	152.49	1.43	3.83	67.82	32,992	AESO Memorandum Report No. 9815 I, June 2017, Table 5
EA-6B	J52-P-408A (2)	2	4,227	8,454	1262	Approach	5.19	6.77	0.84	0.97	0.37	10.48	3168.84	43.88	57.23	8.17	3.13	88.60	26,789	AESO Memorandum Report No. 9941, Revision B, December 2009.

							Emission Indices, lb/1,000 lb fuel							Emissions Factors (lb/hr)						References
Aircraft	Engine Model	# of Engines	Fuel Flow (lb/hr) /Engine	Fuel Flow (lb/hr) /Total	Fuel Flow (gal/hr)	Mode	CO	NO_x	HC	VOC	SO_x	PM	CO_2	CO	NO_x	VOC	SO_x	PM	CO_2	Source of Emissions Indices Information
F-15E	F100-PW-229 (2)	2	3,098	6,196	925	approach	1.17	15.08	-	0.24	0.37	0.70	3200.00	7.25	93.44	1.49	2.29	4.34	19,827	Air Emissions Guide for Air Force Mobile Source, June 2024. Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants
FA-18E/F	F414-GE-400 (2)	2	5,169	10,338	1543	approach	0.72	14.75	0.12	0.14	0.37	6.56	3191.30	7.44	152.49	1.43	3.83	67.82	32,992	AESO Memorandum Report No. 9815 I, June 2017, Table 5
Learjet	TFE731-2-2B	2	532	1,064	159	approach	22.38	5.90	4.26	4.90	0.37	0.09	3200.00	23.81	6.28	5.21	0.39	0.10	3,405	Air Emissions Guide for Air Force Mobile Source, July 2024.
MV-22	T406-AD-400	2	1,910	3,820	570	Cruise	0.52	14.09	0.01	0.01	0.37	1.57	3209.16	1.99	53.82	0.05	1.41	6.00	12,259	AESO Memorandum Report No. 9946 Revision G May 2017, Table 3 VOC = THC x 1.16 x 1.15
P-3C	T56-A-14 (4)	4	1,025	4,100	612	approach	2.51	7.73	0.58	0.67	0.37	3.97	3207.70	10.29	31.69	2.73	1.52	16.28	13,152	AESO Memorandum Report No. 9948, Revision C, March 2010.
P-8 MMA	Boeing 737-800 Series CFM56-7B27	2	2,770	5,540	827	approach	1.41	11.00	0.10	0.12	0.37	0.09	3161.00	7.81	60.94	0.64	2.05	0.49	17,512	AESO Memorandum Report No. 2017-09, April 2017
S-3	TF34-GE-400 (2)	2	1,145	2,290	342	approach	14.10	4.07	1.86	2.14	0.37	3.62	3200.00	32.29	9.32	4.90	0.85	8.29	7,328	AESO Memorandum Report No.

							Emission Indices, lb/1,000 lb fuel							Emissions Factors (lb/hr)						References
Aircraft	Engine Model	# of Engines	Fuel Flow (lb/hr) /Engine	Fuel Flow (lb/hr) /Total	Fuel Flow (gal/hr)	Mode	CO	NO_x	HC	VOC	SO_x	PM	CO_2	CO	NO_x	VOC	SO_x	PM	CO_2	Source of Emissions Indices Information
																				9915B, May 2010.
SH-60	T700-GE-401C (2)	2	600	1,200	179	circle	6.25	6.40	0.55	0.63	0.37	4.20	3221.36	7.50	7.68	0.76	0.44	5.04	3,866	AESO Memorandum Report No. 9929, Revision B, January 2014.

Notes:
Fuel Sulfur Content is based on AESO Memorandum Report No. 2012-01 Revision H, JP-5, 2020: 0.37 lb/1000 lb fuel
VOC = HC*1.15 (AESO Memoranda)
Density of jet fuel: 6.7 lb/gal

Aircraft Data							Emissions (lb/op)							Notes
Aircraft	Engine	Number of Engines	Fuel Flow (lb/op)		Fuel Flow (gal/op)	Mode	CO	NO_x	HC	VOC	SO_x	PM	CO_2	Source of Emissions Indices Information
F-35	F135-PW-400	1	629		93	Touch and Go - Carrier Pattern	0.47	9.96	0.003	0.003	0.23	0.08	1986.01	AESO Memorandum Report No. 2017-18 Revision A, December 2017, Table 1

Table G-19: Vessel Emission Factors

Vessel		VESSEL SPECIFICATIONS	EMISSIONS FACTORS (LB/HR)									
		Propulsion	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO_2	Fuel Consumption at Speed (gal/hr)	CO_2, LB/HR	Reference for Fuel Consumption Rate
Cruiser	CG-72	GE LM 2500	61.51	79.58	4.32	0.23	0.997	0.997	24,188	1,159.20	24,188	Fuel flow rate calculated based on the SOx emission factor and 0.0015% fuel sulfur content
	CG- 72		27.73	285.54	2.46	0.47	4.38	4.38	69,839	2,338.31	69,839	
Destroyer	DDG-100	GE LM 2500	59.72	114.52	4.01	0.27	0.14	0.14	27,565	1,,323.38	27,565	Fuel flow rate calculated based on the SOx emission factor
	Not underway		0.36	25.65	0.04	0.02	0.12	0.12	3,669	89.55	3,669	
	DDG-100 - RW		30.57	374.80	2.39	0.58	0.54	0.54	85,141	2,860.70	85,141	
USCG Cutter WHEC715, 378 feet - Hamilton Class	USCG	Fairbanks Morse T88-1-8, 3,600 hp	5.74	57.91	0.88	11.55	0.21	0.21	1,293,437.39	57,462.69	1,293,437	
Amphibious Assault Ship - Tarawa	LHA-6	Steam Combustion Engineering	8.38	277.87	14.48	0.29	4.94	4.94	35,922	1422.89	35922.08	
	LHA-6 -RW		18.73	199.99	15.15	0.21	3.38	3.38	28,059	1019.90	28059.16	
Landing Helicopter Dock	LHD-2	ALCO 16-251C	8.08	47.83	5.77	0.41	28.58	28.58	47,633	2019.90	47,633	Fuel flow rate calculated based on the SOx emission factor
	LHD-2 - RW		7.66	45.12	5.72	0.41	28.55	28.55	47,490	2014.93	47,490	
Amphibious Transport Dock	LPD-17	turbocharged marine Colt-Pielstick Diesels	31.61	272.28	16.86	0.16	1.36	1.36	16,767.15	796.02	16767.15	Navy database
	LPD-17 - RW		28.08	263.75	14.95	0.14	1.12	1.12	15,025.58	701.49	15025.58	
Landing Craft, Air Cushion	LCAC-91	TF40B	18.32	114.54	3.49	0.16	2.33	2.33	20,693.35	815.92	20693.35	Navy database

Vessel		VESSEL SPECIFICATIONS				EMISSIONS FACTORS (LB/HR)						
		Propulsion	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	CO_2	Fuel Consumption at Speed (gal/hr)	CO_2, LB/HR	Reference for Fuel Consumption Rate
		T-62T-40-7										
Landing Craft Utility	LCU	12V-71 7122-7000	5.06	15.704	1.274	0.009	0.604	0.60	923.57	44.78	923.57	
	AAV-2	400 hp	0.76	6.22	0.82	0.0135	0.26	0.25	1,389.56	67	1389.56	Sox emission factor, in lb/hr, was calculated based on the fuel flow rate and ULS fuel sulfur content.
Rigid Inflatable Boat	RIB-4	QSB5.9M TIER 2	1.88	2.677	0.062	0.002	0.047	0.047	265.182	9.95	265.18	Navy database
	CRRC-5		0.2242	0.9538	0.0128	0.0005	0.0289	0.03	87.23	2.49	87.23	Atlantic Fleet Training and Testing Final EIS/OEIS, September 2018
	LCS -1	Rolls-Royce MT3 0 36	46.14	186.77	3.19	0.21	0.41	0.41	25,512	1054.73	25,512	Fuel flow rate calculated based on the SOx emission factor
	LCS - RW		79.12	152.60	6.12	0.099	0.62	0.62	11,116	492.54	11,116	
	LSD-52		21.25	334.51	10.84	0.11	0.91	0.91	16,263.96	522.39	16,264	
	LSD-52-RW		40.02	604.28	20.43	0.19	1.68	1.68	21,126	965.17	21,126	
	SSN		3.24	2.39	0.17	0.00	0.01	0.01	112.62	4.98	112.62	
	SSN - RW		0.32	0.23	0.02	0.001	0.001	0.00	11.06	4.98	11.06	
	CVN-74		1.23	16.73	0.31	0.006	0.05	0.05	683.62	29.85	683.62	Fuel flow rate calculated based on the SOx emission factor
	CVN - RW		0.12	1.65	0.03	0.001	0.005	0.005	67.61	4.98	67.61	

Notes:
1. Navy and MSC Marine Engine Fuel Consumption & Emission Calculator was used to update the emission factors.
2. All SOx emission factors are based on F-76 (Marine Diesel) with a sulfur content of 0.0015%.
3. RW = Restricted Waters

VESSEL	ENGINE	MODEL	EMISSIONS FACTORS (lb/hr)							Fuel Flow (gph)
			CO	NO_x	VOC	SO_2	PM_{10}	$PM_{2.5}$	CO_2	
Mark VI Patrol Boat 78PB1201 (MkVI)	Main	MTU - 16V2000M94	42.42	81.81	1.88	11.73	3.93	3.93	6,172.34	135

Table G-20: Munitions Emission Factors

Munitions Information							Emission Factor (lb/item)						
Munition Type	Munition	Component	Net Explosive Weight (lb NEW)	Type	Reference	Emission Factor Assumptions and Comments	CO	NO_x	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2
BOMB	MK82 INERT	spotting charge	3	Black powder	Hawaii-Southern California Training and Testing Final EIS/OEIS, October 2018	Assume Spotting Charge	0.26						
BOMB	MK82 HE				Hawaii-Southern California Training and Testing Final EIS/OEIS, October 2018	Calculate for 192 lb of PEP. 80% TNT, 20% Aluminum; TNT EF x 80% used; Data available in TR-83-240.	60.00						
C4			1		Hawaii-Southern California Training and Testing Final EIS/OEIS, October 2018		0.02625	0.007875		0.02625	0.01875		
LRG PROJ	155MM ILL		6		AP-42 Chapter 15, Table 15.4.1-1 EMISSION FACTORS FOR THE USE OF DODIC D505, M485A2 155-MM ILLUMINATION ROUND (PROJECTILE)		0.026	0.094	0.0015	3		0.0027	1.8
LRG PROJ	5.56						1.60E-03	8.50E-05		3.90E-05	2.80E-05		8.70E-04
MED PROJ	30MM		0.03		AP 42, Chapter 15, Table 15.2.1-1 EMISSION FACTORS FOR THE USE OF DODIC B129, M789 30-MM HIGH EXPLOSIVE DUAL PURPOSE		0.00086	0.0002		0.0039	0.0025	0	0.0044

Munitions Information							Emission Factor (lb/item)						
Munition Type	Munition	Component	Net Explosive Weight (lb NEW)	Type	Reference	Emission Factor Assumptions and Comments	CO	NO_x	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2
SML PROJ	7.62						2.30E-03	9.70E-05		5.10E-05	3.80E-05		1.20E-03
SMOKE POT	ABC-M5 30-POUND HC SMOKE POT		1.10		AP 42, Chapter 15, Table 15.7.6-1, EMISSION FACTORS FOR THE USE OF DODIC K866, ABC-M5 30-POUND HC SMOKE POT	Net Explosive Weight for Smokey Sam is from Hazard Classification of United States Military Explosives and Munitions, Revision 15, June 2012	0.0275	0.0000924	0.000594	1.1	0.616	0.000154	0.0165
MISSILE	AIM-7	Fired well above 3,000 ft			Hawaii-Southern California Training and Testing Final EIS/OEIS, October 2018								
MISSILE	AGM-84		215		AP 42, Chapter 15, Table 15.9.1-1, DODIC M023, M112 Demolition Block Charge	Assume similar to C-4 emissions. Net Explosive Weight for AGM -84 is from Hazard Classification of United States Military Explosives and Munitions, Revision 15, June 2012	4.515	1.3545		4.515	3.225	0.0258	135.45
MISSILE	AGM-114B						0.7224	0.21672	0	0.7224	0.516	0.004128	
MISSILE	AGM-65 Maverick						2.1	0.63	0	2.1	1.5	0.012	
MISSILE	AGM-84						4.515	1.3545	0	4.515	3.225	0.0258	
MISSILE	AGM-88 HARM						1.008	0.3024	0	1.008	0.72	0.00576	
MISSILE	SM-3						630			1200	1200		69.6

Munitions Information							Emission Factor (lb/item)						
Munition Type	Munition	Component	Net Explosive Weight (lb NEW)	Type	Reference	Emission Factor Assumptions and Comments	CO	NO_x	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2
Rocket	2.75" RKT HE	warhead			Hawaii-Southern California Training and Testing Final EIS/OEIS, October 2018		0.93	0.0056		0.4	0.29		5.5
Rocket	2.75" RKT Inert	INERT Warhead	Neg.		Hawaii-Southern California Training and Testing Final EIS/OEIS, October 2018		Negligible emissions						
TORPEDO	MK30		No emissions										
	MK46		No emissions										
	MK54		No emissions										

SAM-3

Reference: MDA provided emissions data from EA for Standard Missile (Naval Ordnance Missile Test Station, 1992). Emissions are multiplesd by a factor of three (3), since the reference indicates that the exhaust volume of SM-3 is three time larger than SM-1.

Emissions Factors in tons/launch							
NOx	SOx	CO	VOC	HAPs	PM10	PM2.5	CO_2e
		0.105		0.105	0.19479	0.19479	0.0116

HCL is the only HAP shown.

Assume PM_{10} and PM2.5 emissions= Ferric Oxide + Aluminum Chloride + Aluminum Oxide emissions

SAM-3

Reference: MDA provided emissions data from EA for Standard Missile (Naval Ordnance Missile Test Station, 1992). Emissions are multiplesd by a factor of three (3), since the reference indicates that the exhaust volume of SM-3 is three time larger than SM-1.

Emissions Factors in tons/launch							
NOx	SOx	CO	VOC	HAPs	PM10	PM2.5	CO_2e
		0.105		0.105	0.19479	0.19479	0.0116

HCL is the only HAP shown.

Assume PM_{10} and PM2.5 emissions= Ferric Oxide + Aluminum Chloride + Aluminum Oxide emissions

Table G-21: ALT 1 - Entire Action Emission Increase

Scenario	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Training	324	947	38	5	63.5	62.9
Testing	43	137	5.8	3	25.3	24.8
Range Modernization and Sustainment	1.1	14	0.4	1.0	0.4	0.4
Total Military Readiness Activities	368	1,098	44	9	89	88

Table G-22: ALT 2 - Entire Action Emission Increase

Scenario	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Training	380	1,051	41	5	66	65
Testing	44	140	6	3	25	25
Range Modernization and Sustainment	1	14	0.4	1	0.4	0.4
Total Military Readiness Activities	425	1,205	48	9	92	90

Table G-23: Entire Action Emission Increase by Source Type and Alternative

Mission Readiness- ALT 1

Emission Increase, Total Action

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	49	118	5	5	35	35
Vessel	275	963	38	3	26	26
Munitions	40	1	0	0	28	27
Port Hueneme Repair Activities	2.9	2.6	0.4	0.01	0.1	0.1
Range Modernization and Sustainment	1	14	0.4	1	0.4	0.4
Total	368	1,098	44	9	89	88
	64%	57%	54%	55%	66%	66%

Training Total -ALT 1 (Emission Increase)

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	26	41	2	2	18	18
Vessel	262	903	35	3	20	20
Munitions	33	1	0	0	26	26
Port Hueneme Repair Activities	2.9	2.6	0.4	0.01	0.1	0.1
Total	324	947	38	5	64	63

Testing Total -ALT 1 (Emission Increase)

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	24	76	2	3	17	17
Vessel	13	61	4	0.1	6.6	6.6
Munitions	7	0.2	0	0	2	1
Total	43	137	6	3	25	25

Range Modernization and Sustainment

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Range Modernization and Sustainment	1.11	13.93	0.37	1.03	0.37	0.37

Mission Readiness- ALT 2

Emission Increase, Total Action

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	52	122	5	5	37	37
Vessel	329	1,065	42	3	26	26
Munitions	40	1	0	0	28	27
Port Hueneme Repair Activities	2.9	2.6	0.4	0.01	0.1	0.1
Range Modernization and Sustainment	1	14	0.4	1	0.4	0.4
Total	425	1,205	48	9	92	90

Training Total -ALT 2 (Emission Increase)

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	29	44	3	2	20	20
Vessel	315	1,004	38	3	20	20
Munitions	33	1	0	0	26	26
Port Hueneme Repair Activities	2.9	2.6	0.4	0.01	0.1	0.1
Total	380	1,051	41	5	66	65

Testing Total -ALT 2 (Emission Increase)

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	24	78	2	3	17	17
Vessel	14	62	4	0.1	7	7
Munitions	7	0.2	0	0	2	1
Total	44	140	6	3	25	25

Range Modernization and Sustainment

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Range Modernization and Sustainment	1.1	13.9	0.4	1.0	0.4	0.4

Table G-24: Summary of Emissions – Hawaii

Mission Readiness- ALT 1

Emission Increase Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	12	29	1	1	9	9
Vessel	38	268	11	0.3	8	8
Munitions	0.5	0.02	0.0	0.0	0.1	0.1
Range Modernization and Sustainment	0.3	3.9	0.1	0.3	0.1	0.1
Total	51	301	12	2	18	17
Honolulu County Air Emissions for 2020, tons/year	77,700	20,652	37,295	11,446	14,553	4,369
Percent of Existing Emissions	0.07%	1.46%	0.03%	0.02%	0.12%	0.40%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	10	16	1	1	8	8
Vessel	66	210	9	0	8	8
Munitions	7	0	0	0	6	6
Range Modernization and Sustainment	0	4	0	0	0	0
Total	83	230	10	1	22	22

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	22	46	2	2	17	17
Vessel	104	478	20	1	16	16
Munitions	8	0	0	0	7	6
Range Modernization and Sustainment	0	4	0	0	0	0
Total	134	527	22	3	39	39

Mission Readiness- ALT 2

Emission Increase Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	12	29	1	1	9	9
Vessel	38	268	11	0.3	8	8
Munitions	0.500	0.021	0.000	0.000	0.075	0.053
Range Modernization and Sustainment	0.31	3.88	0.10	0.29	0.10	0.10
Total	51	301	12	2	18	17
Honolulu County Air Emissions for 2020, tons/year	77,700	20,652	37,295	11,446	14,553	4,369
Percent of Existing Emissions	0.07%	1.46%	0.03%	0.02%	0.12%	0.40%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	10	17	1	1	8	8
Vessel	72	222	9	0.4	8	8
Munitions	7	0	0	0	7	6
Range Modernization and Sustainment	0	0	0	0	0	0
Total	90	239	11	1	23	22

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	22	46	2	2	18	18
Vessel	110	490	20	1	16	16
Munitions	8	0	0	0	7	6
Range Modernization and Sustainment	0	4	0	0	0	0
Total	141	540	23	3	40	40

Table G-25: Summary of Emissions – SDAB

Mission Readiness- ALT 1

Within 3 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	8	4	1	0	5	5
Vessel	15	17	1	0	0	0
Munitions	1	0	0	0	0	0
Range Modernization and Sustainment	0.004	0.05	0.0004	0.004	0.002	0.0016
Total	22.8	20.6	1.7	0.3	5.1	5.1
Portside Community Emission, 2018, TPY		1,462	1,248		728	194
Percent of Portside Community Emissions		1.4%	0.1%		0.7%	2.61%

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	12	8	1	0.5	7	7
Vessel	28	58	2	0.09	1	1
Munitions	1	0.1			0.2	0.1
Range Modernization and Sustainment	0.004	0.052	0.0004	0.004	0.002	0.002
Total	40.2	65.9	3.5	0.6	8.4	8.4
Portside Community Emission, 2018, TPY		1,462	1,248		728	194
Percent of Portside Community Emissions		4.5%	0.3%		1.2%	4.3%
Total, tons/day	0.110	0.181	0.010	0.002	0.023	0.023
SDAB Air Emissions for 2020, tons/day	501	88	191	3	95	31
Percent of Existing Emissions	0.02%	0.21%	0.005%	0.06%	0.02%	0.07%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	4	19	0	1	1	1
Vessel	60	127	4	0	1	1
Munitions	4	0	0	0	6	6
Range Modernization and Sustainment	0	0	0	0	0	0
Total	68	146	5	1	8	8

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	15	26	1	1	8	8
Vessel	88	185	7	0	2	2
Munitions	5	0	0	0	6	6
Range Modernization and Sustainment	0.008	0.104	0.001	0.008	0.003	0.003
Total	108	212	8	2	16	16

Mission Readiness- ALT 2

Within 3 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	8	4	1	0	5	5
Vessel	15	17	1	0	0	0
Munitions	1	0.0	0.0	0.0	0.1	0.1
Range Modernization and Sustainment	0.004	0.05	0.0004	0.004	0.002	0.0016
Total	23	21	2	0.3	5	5
Portside Community Emission, 2018, TPY	0	1,462	1,248	0	728	194
Percent of Portside Community Emissions		1.4%	0.1%		0.7%	2.6%

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	12	8	1	1	7	7
Vessel	29	60	2	0.1	1	1
Munitions	1	0.1	0.0	0.0	0.2	0.1
Range Modernization and Sustainment	0.004	0.05	0.0004	0.004	0.002	0.0016
Total	41	68	4	1	8	8
Portside Community Emission, 2018, TPY		1,462	1,248		728	194
Percent of Portside Community Emissions		4.6%	0.3%		1.2%	4.3%
Total, tons/day	0.11	0.19	0.01	0.002	0.02	0.02
SDAB Air Emissions for 2020, tons/day	501	88	191	3	95	31
Percent of Existing Emissions	0.02%	0.21%	0.005%	0.06%	0.02%	0.08%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	4	21	0	1	1	1
Vessel	77	159	6	0	1	1
Munitions	4.0	0.0	0.0	0.0	6.1	6.0
Range Modernization and Sustainment	0	0	0	0	0	0
Total	85	180	6	1	8	8

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	16	28	2	1	8	8
Vessel	106	219	8	0	2	2
Munitions	5	0	0	0	6	6
Range Modernization and Sustainment	0.01	0.10	0.00	0.01	0.00	0.00
Total	127	247	9	2	17	17

Table G-26: Summary of Emissions – SCAB

Mission Readiness- ALT 1

Within 3 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	1	-1	0.1	0.0	0.43	0.43
Vessel	6	6	0.5	0.5	-0.5	-0.5
Munitions	1	0	0.0	0.0	0	0
Range Modernization and Sustainment	0	2	0.1	0.2	0	0
Total	8.4	8.0	0.7	0.6	0.4	0.3

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	-0.2	-1.0	0.0	-0.1	0	0
Vessel	15	40	1.8	1.0	0.5	0.5
Munitions	2	0.2	0.00	0.00	0.4	0.3
Range Modernization and Sustainment	0.2	3	0.1	0.2	0.1	0.1
Total	17	43	2	1	0.6	0.5
Total, tons/day	0.047	0.117	0.005	0.003	0.002	0.001
SCAB Air Emissions for 2020, tons/day	1,973	361	562	17	219	87
Percent of Existing Emissions	0.002%	0.032%	0.001%	0.017%	0.0008%	0.002%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	9	0	0	0	0
Vessel	50	109	4	1	1	1
Munitions	7	0	0	0	6	6
Range Modernization and Sustainment	0	5	0	0	0	0
Total	58	123	4	1	7	7

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	8	0	0	-1	-1
Vessel	65	149	6	2	2	2
Munitions	10	0	0	0	7	6
Range Modernization and Sustainment	1	10	0	1	0.3	0.3
Total	75	168	6	3	8	7

Mission Readiness- ALT 2

Within 3 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	1	-1	0	0	0	0
Vessel	6	6	1	0	0	0
Munitions	1	0.1	0.0	0.0	0.3	0.2
Range Modernization and Sustainment	0	2	0	0	0	0
Total	8.4	8.0	0.73	0.60	0.4	0.3

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	-0.1	-1	-0.02	-0.1	-0.4	-0.4
Vessel	16	42	2	1	1	1
Munitions	2	0.2	0.0	0.0	0.4	0.3
Range Modernization and Sustainment	0.2	3.1	0.1	0.2	0.1	0.1
Total	18	44	2	1	1	1
Total, tons/day	0.050	0.122	0.005	0.003	0.002	0.001
SCAB Air Emissions for 2020, tons/day	1,973	361	562	17	219	87
Percent of Existing Emissions	0.003%	0.034%	0.001%	0.018%	0.001%	0.002%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	1	10	0	0	0	0
Vessel	66	140	5	1	1	1
Munitions	7.4	0.2	0.0	0.0	6.1	6.1
Range Modernization and Sustainment	0	5	0	0	0	0
Total	75	155	5	1	7	7

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	1	9	0	0	0	0
Vessel	82	182	7	2	2	2
Munitions	10	0	0	0	7	6
Range Modernization and Sustainment	1	10	0	1	0	0
Total	93	202	7	3	8	8

Table G-27: Summary of Emissions – SOCAL

Mission Readiness- ALT 1

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	2	5	0	0	0	0
Munitions	2	0	0	0	1	0
Total	4	5	0	0	1	0

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	6	17	1	1	5	5
Vessel	-62	-108	-4	0	0	0
Munitions	4	0	0	0	1	1
Total	-52	-90	-3	0	6	6

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	6	17	1	1	5	5
Vessel	-60	-103	-4	0	0	0
Munitions	6	0	0	0	1	1
Total	-48	-85	-3	0	7	6

Mission Readiness- ALT 2

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	2	5	0	0	0	0
Munitions	2.4	0.1	0.0	0.0	0.5	0.4
Total	4	5	0	0	1	0

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	7	19	1	1	6	6
Vessel	-50	-85	-3	0	0	0
Munitions	4	0	0	0	1	1
Total	-39	-66	-3	1	7	7

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	7	19	1	1	6	6
Vessel	-49	-80	-3	0	0	0
Munitions	6	0	0	0	1	1
Total	-35	-61	-2	1	8	7

Table G-28: Summary of Emissions – PMSR

Mission Readiness- ALT 1

Within 3 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	1	3	0	0	1	1
Vessel	2	10	0	0	0	0
Munitions	0	0	0	0	0	0
Total	3	13	0	0	1	1

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	2	3	0.1	0.15	1	1
Vessel	11	42	1.6	0.07	1	1
Munitions	2	0.03	0.0	0.00	1	1
Total	15	45	1.8	0.21	3	3
Total, tons/day	0.04	0.12	0.005	0.0006	0.01	0.01
Air Emissions for 2020, tons/day	450	43	266	4	66	32
Percent of Existing Emissions	0.01%	0.29%	0.002%	0.02%	0.01%	0.02%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	4	16	0	1	4	4
Vessel	57	177	7	0	6	6
Munitions	8	0	0	0	6	6
Total	69	193	7	1	16	16

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	6	20	0	1	5	5
Vessel	68	218	9	0	7	7
Munitions	11	0	0	0	7	7
Total	84	238	9	1	19	18

Mission Readiness- ALT 2

Within 3 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	1	3	0	0	1	1
Vessel	2	10	0	0	0	0
Munitions	0	0.0	0.0	0.0	0.0	0.0
Total	3	13	0	0	1	1

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	2	3	0.1	0.1	1	1
Vessel	11	42	2	0.1	1	1
Munitions	2	0.03	0.0	0.0	0.8	0.6
Total	15	45	2	0	3	3
Total, tons/day	0.04	0.12	0.005	0.0006	0.01	0.01
Air Emissions for 2020, tons/day	450	43	266	4	66	32
Percent of Existing Emissions	0.01%	0.29%	0.002%	0.02%	0.01%	0.02%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	4	16	0	1	4	4
Vessel	57	177	7	0	6	6
Munitions	8.1	0.0	0.0	0.0	6.3	6.2
Total	69	193	7	1	16	16

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	6	20	0	1	5	5
Vessel	68	219	9	0	7	7
Munitions	11	0	0	0	7	7
Total	85	238	9	1	19	18

Table G-29: Summary of Emissions – NOCAL

Mission Readiness- ALT 1

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0.06	0.19	0.01	0.01	0.05	0.05
Vessel	1	4	0.21	0.01	0.08	0.08
Munitions	0.2	0.01	0	0	0.006	0.005
Total	1	4	0.2	0.01	0.1	0.1
Total, tons/day	0.0030	0.0104	0.0006	0.0000	0.0004	0.0004
Air Emissions for 2020, tons/day	728	36	191	4	100	57
Percent of Existing Emissions	0.0004%	0.03%	0.0003%	0.001%	0.0004%	0.001%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0.3	0.3	0.03	0.02	0.2	0.2
Vessel	9	31	1	0.04	0.1	0.1
Munitions	1	0.03	0	0	0.02	0.01
Total	10	31	1	0.1	0.3	0.3

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0.3	0.5	0.03	0.02	0.2	0.2
Vessel	10	35	1	0.05	0.2	0.2
Munitions	1	0.04	0	0	0.02	0.02
Total	11	35	1	0.1	0.4	0.4

Mission Readiness- ALT 2

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0.1	0.2	0.01	0.01	0.1	0.1
Vessel	1	4	0.2	0.01	0.1	0.1
Munitions	0.2	0.01	0	0	0.01	0.005
Total	1	4	0.2	0.01	0.1	0.1
Total, tons/day	0.003	0.01	0.0006	0.0000	0.0004	0.0004
Air Emissions for 2020, tons/day	728	36	191	4	100	57
Percent of Existing Emissions	0.0004%	0.03%	0.0003%	0.001%	0.0004%	0.001%

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0.3	0.3	0.03	0.02	0.2	0.2
Vessel	9	31	1	0.04	0.1	0.1
Munitions	1	0.03	0	0	0.02	0.01
Total	10	31	1	0.1	0.3	0.3

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0.3	0.5	0.03	0.02	0.2	0.2
Vessel	10	35	1	0.05	0.2	0.2
Munitions	1	0.04	0	0	0.02	0.02
Total	11	35	1	0.1	0.4	0.4

Table G-30: Summary of Emissions – Transit Corridor

Mission Readiness- ALT 1

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	0	0	0	0	0	0
Munitions	0	0	0	0	0	0
Total	0	0	0	0	0	0

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	-1	-2	0	0	0	0
Munitions	0	0	0	0	0	0
Total	-1	-2	0	0	0	0

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	-1	-2	0	0	0	0
Munitions	0	0	0	0	0	0
Total	-1	-2	0	0	0	0

Mission Readiness- ALT 2

Within 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	0	0	0	0	0	0
Munitions	0.1	0.0	0.0	0.0	0.0	0.0
Total	0	0	0	0	0	0

> 12 NM

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	1	1	0	0	0	0
Munitions	0	0	0	0	0	0
Total	1	1	0	0	0	0

Total

Activity	Emissions by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Aircraft	0	0	0	0	0	0
Vessel	1	1	0	0	0	0
Munitions	0	0	0	0	0	0
Total	1	1	0	0	0	0

G.3 Navy Record of Non-Applicability (RONA) for Clean Air Act Conformity of Non-Applicability

G.3.1 South Coast Air Basin Nonattainment Area

NAVY RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action: Hawaii-California Training and Testing

Action Proponents: Commander U.S. Pacific Fleet, Naval Air Systems Command, Naval Facilities Engineering and Expeditionary Warfare Center, Naval Sea Systems Command, Naval Information Warfare Systems Command, Office of Naval Research, U.S. Marine Corps, U.S. Army, and U.S. Air Force

Proposed Action Name: Hawaii-California (HCTT) Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS)

Proposed Action and Emissions Summary:

The Proposed Action (Preferred Alternative, Alternative 1) consists of military readiness activities in the waters of the States of Hawaii and California, as well as in federal and international waters. The action involves the operation of military aircraft, vessels, and small boats to achieve requisite training and testing requirements. Small boats and vessels would be operational in locations within the South Coast Air Basin. These nearshore activities generate emissions primarily through fossil fuel combustion from engine operation. The region, managed by South Coast Air Quality Management District, is classified as an extreme non-attainment area for ozone (eight-hour average concentration), a carbon monoxide maintenance area, a maintenance area for nitrogen dioxide, a maintenance area for particulate matter with an aerodynamic size less than or equal to 10 microns (PM_{10}) and a serious non-attainment area for particulate matter with an aerodynamic size less than or equal to 2.5 microns ($PM_{2.5}$). As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* levels for the above pollutants and their precursors. As shown in Table 1 below, Proposed Action would result in no exceedance of the applicable *de minimis* levels. Therefore, emissions from the Proposed Action would show conformity under the Clean Air Act.

Table G-1: Estimated Net Change in Annual Criteria Air Pollutant Emissions from Military Readiness Activities in the South Coast Air Basin (Within 3 NM), Alternative 1[1]

Source	*Emissions Increase by Air Pollutant (TPY)*					
	CO	*NO_X*	*VOC*	*SO_X*	*PM_{10}*	*$PM_{2.5}$*
Net Change in Emissions from all Sources	8.4	8.0	0.7	0.6	0.4	0.3
De Minimis Level	100	10	10	70	100	70

[1] Table includes criteria pollutant precursors (e.g., VOC). Individual values may not add exactly to total values due to rounding.

Notes: CO = carbon monoxide, NO_X = nitrogen oxides, $PM_{2.5}$ = particulate matter ≤ 2.5 microns in diameter, PM_{10} = particulate matters≤ 10 microns in diameter, SO_X = sulfur oxides (precursor to $PM_{2.5}$), TPY = tons per year, VOC = volatile organic compounds

Affected Air Basins: South Coast Air Basin
Date RONA prepared: August 21, 2025
RONA prepared by: Naval Facilities Engineering Command, Southwest

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that de minimis thresholds for nonattainment pollutants and their precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table 1 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix G of the HCTT EIS/OEIS.

Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval:

Alexander Stone

Date: August 21, 2025

Alexander M. Stone
HCTT Project Manager, U.S. Pacific Fleet

G.3.2 San Diego Air Basin Nonattainment Area

NAVY RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action: Hawaii-California Training and Testing

Action Proponents: Commander U.S. Pacific Fleet, Naval Air Systems Command, Naval Facilities Engineering and Expeditionary Warfare Center, Naval Sea Systems Command, Naval Information Warfare Systems Command, Office of Naval Research, U.S. Marine Corps, U.S. Army, and U.S. Air Force

Proposed Action Name: Hawaii-California (HCTT) Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS)

Proposed Action and Emissions Summary:

The Proposed Action (Preferred Alternative, Alternative 1) consists of military readiness activities in the waters of the States of Hawaii and California, as well as in federal and international waters. The action involves the operation of military aircraft, vessels, and small boats to achieve requisite training and testing requirements. Small boats and vessels would be operational in locations within the San Diego Air Basin. These nearshore activities generate emissions primarily through fossil fuel combustion from engine operation. The region, managed by San Diego Air Pollution Control District, is classified as a severe non-attainment area for ozone (eight-hour average concentration). As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* levels for ozone precursors, oxides of nitrogen (NO_x) and volatile organic compounds (VOC). As shown in Table 1 below, Proposed Action would result in no exceedance of the applicable *de minimis* levels. Therefore, emissions from the Proposed Action would show conformity under the Clean Air Act.

Table 1: Estimated Net Change in Annual Criteria Air Pollutant Emissions from Military Readiness Activities in the San Diego Air Basin (Within 3 NM), Alternative 1[1]

Source	Emissions Increase by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Net Change in Emissions from all Sources	23	21	2	0.3	5	5
De Minimis Level	N/A	25	25	N/A	N/A	N/A

[1] Table includes criteria pollutant precursors (e.g., volatile organic compounds). Individual values may not add exactly to total values due to rounding. Activity occurring on range only for training and testing.
Notes: CO = carbon monoxide, NO_X = nitrogen oxides, $PM_{2.5}$ = particulate matter ≤ 2.5 microns in diameter, PM_{10} = particulate matter≤ 10 microns in diameter, SO_X = sulfur oxides, TPY = tons per year, VOC = volatile organic compounds

Affected Air Basins: San Diego Air Basin
Date RONA prepared: August 21, 2025
RONA prepared by: Naval Facilities Engineering Command, Southwest

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that de minimis thresholds for ozone precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table 1 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix G of the HCTT EIS/OEIS.

Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval:

Alexander Stone

Date: August 21, 2025

Alexander M. Stone
HCTT Project Manager, U.S. Pacific Fleet

G.3.3 South Central Coast Air Basin Air Basin Nonattainment Area

NAVY RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action: Hawaii-California Training and Testing

Action Proponents: Commander U.S. Pacific Fleet, Naval Air Systems Command, Naval Facilities Engineering and Expeditionary Warfare Center, Naval Sea Systems Command, Naval Information Warfare Systems Command, Office of Naval Research, U.S. Marine Corps, U.S. Army, and U.S. Air Force

Proposed Action Name: Hawaii-California (HCTT) Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS)

Proposed Action and Emissions Summary:

The Proposed Action (Preferred Alternative, Alternative 1) consists of military readiness activities in the waters of the States of Hawaii and California, as well as in federal and international waters. The action involves the operation of military aircraft, vessels, and small boats to achieve requisite training and testing requirements. Small boats and vessels would be operational in locations within the South Central Coast Air Basin. These nearshore activities generate emissions primarily through fossil fuel combustion from engine operation. The region, managed by Ventura County Air Pollution Control District, is classified as a serious non-attainment area for ozone (eight-hour average concentration). As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* levels for ozone precursors, oxides of nitrogen (NO_x) and volatile organic compounds (VOC). As shown in the table below, Proposed Action would result in no exceedance of the applicable *de minimis* levels. Therefore, emissions from the Proposed Action would show conformity under the Clean Air Act.

Table 1: Estimated Net Change in Annual Criteria Air Pollutant Emissions from Military Readiness Activities in the South Central Coast Air Basin (Within 3 NM), Alternative 1[1]

Source	Emissions Increase by Air Pollutant (TPY)					
	CO	NO_X	VOC	SO_X	PM_{10}	$PM_{2.5}$
Net Change in Emissions from all Sources	3	13	0.4	0.12	1.0	1.0
De Minimis Level	N/A	50	50	N/A	N/A	N/A

[1] Table includes criteria pollutant precursors (e.g., volatile organic compounds). Individual values may not add exactly to total values due to rounding. Activity occurring on range only for training and testing.
Notes: CO = carbon monoxide, NO_X = nitrogen oxides, $PM_{2.5}$ = particulate matter ≤ 2.5 microns in diameter, PM_{10} = particulate matter≤ 10 microns in diameter, SO_X = sulfur oxides, TPY = tons per year, VOC = volatile organic compounds

Affected Air Basins: South Central Coast Air Basin
Date RONA prepared: August 21, 2025
RONA prepared by: Naval Facilities Engineering Command, Southwest

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that de minimis thresholds for ozone precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table 1 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix G of the HCTT EIS/OEIS.

Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval:

Alexander Stone

Date: August 21, 2025

Alexander M. Stone
HCTT Project Manager, U.S. Pacific Fleet

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Appendix H Description of Systems and Ranges

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APPENDIX H DESCRIPTION OF SYSTEMS AND RANGES

The Action Proponents have been conducting military readiness activities throughout the in-water areas around the Hawaiian Islands and off the coast of California for decades. The tempo and types of training and testing activities have fluctuated within the Hawaii-California Training and Testing (HCTT) Study Area (Study Area) due to changing requirements, the introduction of new technologies, the dynamic nature of international events, advances in warfighting doctrine and procedures, and force structure changes. Such developments have influenced the frequency, duration, intensity, and location of required training and testing.

H.1 DESCRIPTION OF SONAR, MUNITIONS, TARGETS, AND OTHER SYSTEMS EMPLOYED IN HAWAII-CALIFORNIA TRAINING AND TESTING EVENTS

The Navy uses a variety of sensors, platforms, weapons, and other devices, including ones used to ensure the safety of Sailors and Marines, to meet its mission. Training and testing with these systems may have the potential to introduce acoustic (sound) energy and expended materials into the environment. The environmental impact of these activities was analyzed in Chapter 3 (Affected Environment and Environmental Consequences) of this Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). This appendix presents and organizes sonar systems, munitions, targets, and other systems, including unmanned systems, in a manner intended to facilitate understanding of both the activities that use them and the analysis of their environmental effects, described in Chapter 3 (Affected Environment and Environmental Consequences) of this EIS/OEIS. The use of unmanned systems throughout all warfare areas has increased since the 2018 Hawaii-Southern California Training and Testing EIS/OEIS and is reflected in this EIS/OEIS. Because of the prevalence of unmanned systems use, the terms “aircraft” and “vessels” can also refer to their unmanned variants: unmanned aircraft systems (UASs), unmanned surface vessels (USVs), and unmanned underwater vehicles.

H.1.1 SONAR SYSTEMS AND OTHER ACOUSTIC SOURCES

Sonar. Sonar, originally an acronym for “SOund Navigation And Ranging,” is a technique that uses underwater sound to navigate, communicate, or detect underwater objects (the term sonar is also used for the equipment used to generate and receive sound). There are two basic types of sonar: active and passive.

Active sonar emits sound waves that travel through the water, reflect off objects, and return to a receiver. Sonar is used to determine the distance to an underwater object by calculating the speed of sound in water and the time for the sound wave to travel to the object and back. For example, active sonar systems are used to track targets or to aid in vessel navigation by identifying known ocean floor features. Some whales, dolphins, and bats use echolocation, a similar technique, to identify their surroundings and to locate prey.

Passive sonar uses listening equipment, such as underwater microphones (hydrophones) and receiving sensors on ships, submarines, aircraft, or autonomous vehicles, to pick up underwater sounds. The advantage of passive sonar is that it places no sound in the water, and thus does not reveal the location of the listening vessel. Passive sonar can indicate the presence, character, and direction noise-producing objects like ships and submarines; however, passive sonar is increasingly ineffective as modern submarines become quieter. Passive sonar has no potential acoustic impact on the environment, and therefore, is not discussed further or analyzed within this EIS/OEIS.

All sounds, including sonar, are categorized by frequency. For this EIS/OEIS, active sonar is categorized into four frequency ranges: low-frequency[1], mid-frequency, high-frequency, and very high-frequency.

- Low-frequency active sonar emits sounds at frequencies less than 1 kilohertz (kHz). Low-frequency active sonar is useful for detecting objects at great distances because low-frequency sounds do not dissipate as rapidly as higher frequency sounds.
- Mid-frequency active sonar emits sounds at frequencies from 1 to 10 kHz. Mid-frequency active sonar is the Navy's primary tool for detecting and identifying submarines. Active sonar in this frequency range provides a valuable combination of range and target accuracy.
- High-frequency active sonar emits sounds at frequencies greater than 10 kHz, up to 100 kHz. High-frequency sounds dissipate rapidly and have a small effective range; however, high-frequency sounds provide higher resolution of objects and are useful at detecting and identifying smaller objects such as sea mines.
- Very high-frequency sources are those that operate above 100 kHz but below 200 kHz[2].

Modern sonar technology includes a variety of sonar sensor and processing systems. In concept, the simplest active sonar emits sound waves, or "pings," sent out in multiple directions and the sound waves then reflect off of the target object in multiple directions (Figure H-1). The sonar source calculates the time it takes for reflected sound waves to return; this calculation determines the distance to the target object. More sophisticated active sonars emit a ping and then rapidly scan or listen to the sound waves in a specific area. This provides both distance to the target and directional information. Even more advanced sonars use multiple receivers to listen to echoes from several directions simultaneously and provide efficient detection of both direction and distance. It should be noted that active sonar is rarely used continuously throughout the listed activities. In addition, when sonar is in use, the sonar "pings" occur at intervals, referred to as a duty cycle, and the signals themselves are very short in duration. For example, a sonar that emits a 1-second ping every 10 seconds has a 10 percent duty cycle.

The Navy utilizes sonar systems and other acoustic sensors in support of a variety of mission requirements. Primary uses include detection of and defense against submarines (anti-submarine warfare) and mines (mine warfare), safe navigation and effective communications, and oceanographic surveys. Specific examples of how sonar systems are used for Navy activities are discussed in the following sections.

Activity tables in Section A.3 (Training Activities) and Section A.4 (Testing Activities) of Appendix A (Activity Descriptions) list sonar bin categories that include specific bins assessed for take of protected species under that activity. Bins are also discussed and defined in Section 3.0.3.3.1 (Acoustic Stressors) of this EIS/OEIS. Various activities may also use *de minimis* sound sources that are not expected to result in take of protected species.

[1] Surveillance Towed Array Sensor System Low-Frequency Active sonar, which may be used in the Study Area, is not among the sources analyzed in this document. The potential environmental impacts from use of Surveillance Towed Array Sensor System Low-Frequency Active sonar are analyzed in a separate National Environmental Policy Act document. SURTASS was considered in the analysis of cumulative impacts in this EIS/OEIS.

[2] Frequencies above 200 kHz are not categorized because they are above the hearing threshold of most marine species.

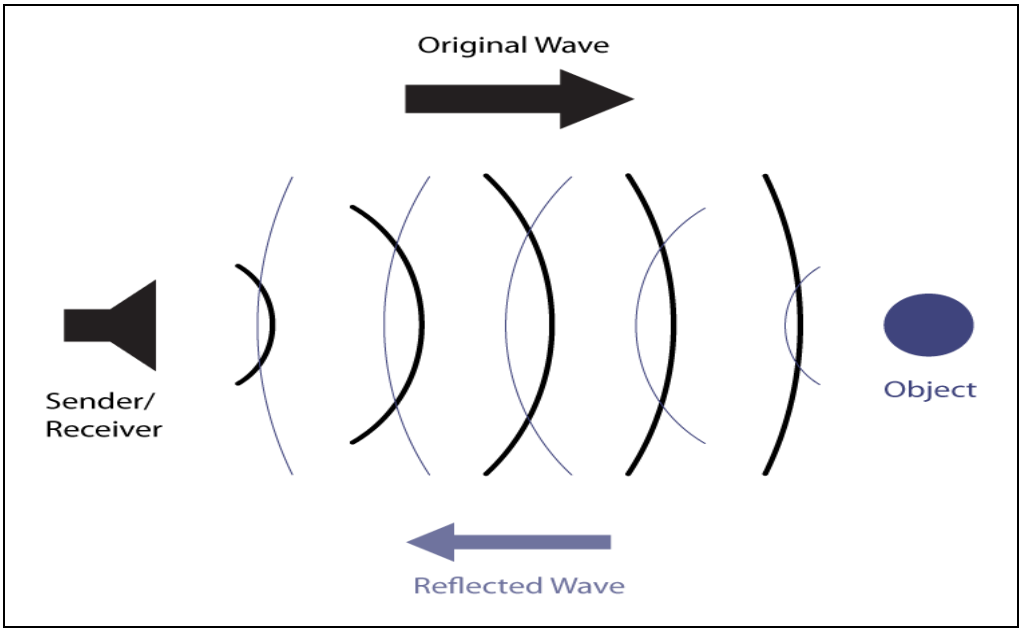


Figure H-1: Principle of an Active Sonar

Anti-Submarine Warfare. Systems used in anti-submarine warfare include sonars, torpedoes, and acoustic countermeasure devices. These systems are employed from a variety of platforms (surface ships, submarines, rotary-wing aircraft, fixed-wing aircraft, and unmanned vehicles). Surface ships conducting anti-submarine warfare are typically equipped with hull-mounted sonar (passive and active) for the detection of submarines (or submarine targets during training and testing events). Aircraft use dipping sonar or sonobuoys (passive and active) to locate submarines (or targets). Fixed-wing aircraft deploy both active and passive expendable sonobuoys to assist in detecting and tracking submarines (or targets). Submarines are equipped with hull-mounted sonars to detect, localize, and track other submarines and surface ships. Submarines primarily use passive sonar; active sonar is used mostly for navigation. There are also unmanned vehicles currently being developed to deploy anti-submarine warfare systems.

Anti-submarine warfare activities often use mid-frequency (1 to 10 kHz) active sonar, though low-frequency and high-frequency active sonar systems are also used for specialized purposes. Typical active sonar systems and acoustic sensors used during anti-submarine warfare sonar training and testing exercises include the following:

Surface Ship Sonar Systems: A variety of surface ships operate hull-mounted or towed mid-frequency active sonar during training exercises and testing activities (Figure H-2). Unmanned surface vessels can also include sonar systems, such as a towed sonar system.

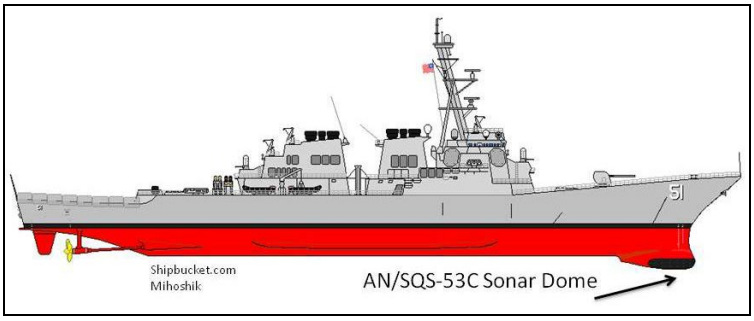


Figure H-2: Guided Missile Destroyer with Hull-Mounted Sonar

Submarine Sonar Systems: Submarines are equipped with hull-mounted mid-frequency and high-frequency active sonar (Figure H-3) used to detect and target enemy submarines and surface ships. A submarine's mission relies on its stealth; therefore, a submarine uses its active sonar sparingly because each sound emission gives away the submarine's location.

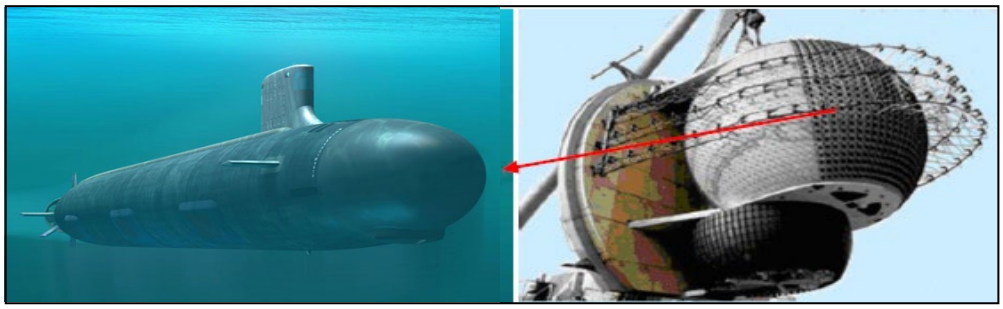


Figure H-3: Submarine Active Sonar Array

Aircraft Sonar Systems: Aircraft sonar systems include sonobuoys and dipping sonars.

- **Sonobuoys:** Active sonobuoys are expendable devices that contain a data transmitter and a hydrophone. The sounds collected by the sonobuoy are transmitted back to the operator (aboard ship or aircraft) for analysis. Sonobuoys allow for short- and long-range detection of surface ships and submarines. These systems are deployed by ship or aircraft (Figure H-4).



Figure H-4: Loading a Sonobuoy in a P-8 Poseidon Aircraft

- **Dipping Sonars:** Dipping sonars are recoverable devices lowered into the water via cable from low-flying aircraft (Figure H-5). The sonar detects underwater targets and determines the distance and movement of the target relative to the position of the aircraft.



Figure H-5: Helicopter Deploys Dipping Sonar

Exercise Torpedoes: Some torpedoes used in training and testing activities may transmit active sonar signals. Surface ships, aircraft, and submarines primarily use torpedoes in anti-submarine warfare (Figure H-6). Recoverable, non-explosive torpedoes, categorized as either lightweight or heavyweight, are used during training and testing. Torpedoes operate autonomously, or in the case of heavyweight torpedoes, use a guidance system to operate the torpedo remotely through an attached wire (guidance wire). The autonomous guidance systems operate either passively (listening for sounds generated by the target) or actively (pinging to search for the target). Torpedo training in the Study Area is mostly simulated—solid masses that approximate the weight and shape of a torpedo are fired, rather than fully functional torpedoes. Testing in the Study Area mostly uses fully functional exercise torpedoes.

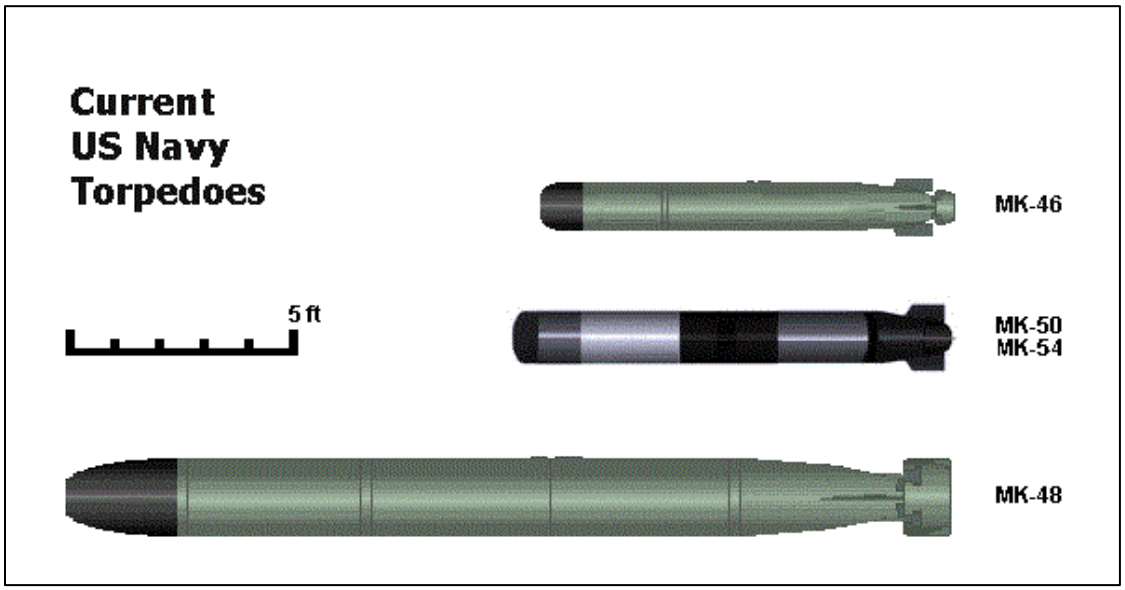


Figure H-6: Current United States Navy Torpedoes

Anti-Submarine Warfare Targets: Anti-submarine warfare training targets are autonomous undersea vehicles used to simulate target submarines (Figure H-7). The training targets are equipped with one or more of the following devices: (1) acoustic projectors emitting sounds to simulate submarine acoustic

signatures, (2) echo repeaters to simulate the characteristics of the echo of a sonar signal reflected from a submarine, and (3) magnetic sources that mimic those of a submarine.



Figure H-7: Anti-Submarine Warfare Target

Mine Warfare. Mine warfare training and testing activities use a variety of different sonar systems that are typically high frequency (greater than 10 kHz) and very high frequency (greater than 100 kHz). These sonar systems are used to detect, locate, and characterize moored and bottom mines (Figure H-8). The majority of mine warfare sonar sensors can be deployed by more than one platform (e.g., helicopter, unmanned underwater and surface vehicle, or surface ship) and may be interchangeable among platforms. Surface ships and submarines use sonar to detect mines and objects.

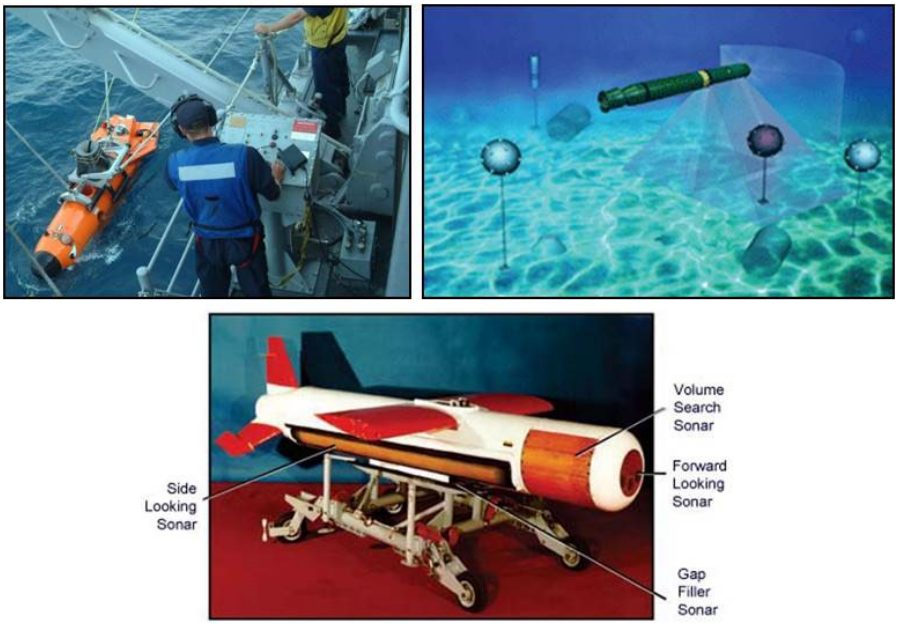


Figure H-8: Mine Warfare Systems
(Source: Graphic on upper right side from Lockheed Martin)

Safety, Navigation, Communications, and Oceanographic Systems. Naval ships, submarines, and unmanned surface and subsurface vehicles rely on equipment and instrumentation that use active sonar during both routine operations and training and testing events. Sonar systems are used to gauge water

depth, and detect and map objects, navigational hazards, and the ocean floor, and transmit communication signals.

Other Acoustic Systems. The Navy uses a variety of other acoustic sensors to protect ships anchored or at the pier, as well as shore facilities. These systems, both active and passive, detect potentially hostile swimmers, broadcast warnings to alert Navy divers of potential hazards, and gather information regarding ocean characteristics (ocean currents and wave measurements). They are generally stationary systems in Navy harbors and piers. Navy marine mammals (Atlantic bottlenose dolphins [*Tursiops truncatus*]) are also used to detect hostile swimmers around Navy facilities. A trained animal is deployed under behavioral control of a handler to find an intruding swimmer. Upon finding the "target" of the search, the animal returns to the boat and alerts the animal handlers, and the animals are given a localization marker or leg cuff that they attach to the intruder. Swimmers that have been marked with a leg cuff are reeled in by security support boat personnel via a line attached to the cuff. In addition, the Navy's research and acquisition community uses sensors for a variety of tests, including tracking during testing activities and collecting data for test analysis.

H.1.2 MUNITIONS

Most ordnance and munitions used during training and testing events fall into three basic categories: projectiles, missiles, and bombs. Ordnance can be further defined by their net explosive weight, which is a measure of defining the explosive force of a munition without the packaging, casings, bullets, etc. Net explosive weight is the trinitrotoluene (TNT) equivalent of energetic material, which is the standard measure of strength of bombs and other explosives. For example, a 2,000-pound (lb.) bomb may have anywhere from 600 to 1,000 lb. of net explosive weight.

Projectiles. Projectiles are fired during gunnery exercises and testing events from a variety of weapons, including pistols and rifles to large-caliber, turret-mounted guns on the decks of Navy ships and mounted gun systems from aircraft. Projectiles can be either high-explosive munitions (e.g., certain gun shells), or non-explosive practice munitions (e.g., rifle/pistol bullets). Explosive rounds can be fused to either explode on impact or in the air (i.e., just prior to impact). Projectiles are broken down into three basic categories in this EIS/OEIS:

- **Small-Caliber Projectiles:** These projectiles are up to and including .50-caliber (approximately 1/2 inch [in.] diameter). Small-caliber projectiles (e.g., bullets), are primarily fired from pistols, rifles, and machine guns (i.e., small arms) and mostly during training events for an individual Sailor to become and remain proficient (Figure H-9).



Figure H-9: Shipboard Small Arms Training

- **Medium-Caliber Projectiles:** These projectiles are larger than .50-caliber, but smaller than 57 millimeter (mm) (approximately 2-1/4 in. diameter). The most common size medium-caliber

projectiles are 20 mm, 25 mm, and 40 mm. Medium-caliber projectiles are fired from machine guns operated by one to two crewman and mounted on the deck of a ship, wing-mounted guns on aircraft, and fully automated guns mounted on ships for defense against missile attack (Figure H-10). Medium-caliber projectiles also include 40 mm grenades, which can be fired from hand-held grenade launchers or crew-served deck-mounted guns. Medium-caliber projectiles can be non-explosive practice munitions or high-explosive projectiles. High-explosive projectiles are usually fused to detonate on impact; however, advanced high-explosive projectiles can detonate based on time, distance, or proximity to a target.



Figure H-10: Shipboard Medium-Caliber Guns

- **Large-Caliber Projectiles:** These includes projectiles 57 mm and larger. The largest projectile currently in service has a 5 in. diameter. The most widely used large-caliber projectiles are 57 mm, and 5 in. (Figure H-11). The most common 5 in. projectile is approximately 26 in. long and weighs 70 lb. Large-caliber projectiles are fired exclusively from turret-mounted guns located on ship decks and can be used to fire on surface ships and boats, in defense against missiles and aircraft, and against land-based targets. Large-caliber projectiles can be non-explosive practice munitions or high-explosive munitions. High-explosive projectiles can detonate on impact or in the air.



Figure H-11: Shipboard Large-Caliber Gun and Projectiles

Missiles and Rockets. Missiles are rocket or jet-propelled munitions used to attack ships, aircraft, and land-based targets, as well as defend ships against other missiles. Guidance systems and advanced fusing technology ensure that missiles reliably impact on or detonate near their intended target.

Missiles are categorized according to their intended target, as described below, and can be further classified according to net explosive weight. Rockets are included within the category of missiles.

- **Air Missiles:** Air missiles are fired from ships and aircraft against enemy aircraft and incoming missiles (Figure H-12). Air missiles are configured to explode in the air near, or on impact with their intended target. Missiles are the target and are a ship-based defense against incoming missiles.



Figure H-12: Rolling Airframe Missile and Air-to-Air Missile

- **Surface Missiles:** Surface missiles are fired from aircraft, ships, and submarines against surface ships (Figure H-13). Surface missiles are typically configured to detonate on impact or just above the intended target.



Figure H-13: Surface Missile Fired from MH-60 Helicopter

- **Strike Missiles:** Strike missiles are fired from aircraft, ships, and submarines against land-based targets. Strike missiles are typically configured to detonate on impact or near their intended target. The High-Speed Anti-Radiation Missile, used to destroy enemy radar sites, is an example of a strike missile used during at-sea training, and is fired at a floating sea-borne target that replicates a land-based radar site.

Bombs. Bombs are unpowered munitions dropped from aircraft on land and water targets. The majority of bombs used during training and testing in the Study Area are non-explosive. However, explosive munitions are occasionally used for proficiency inspections and testing requirements. Bombs fall into two categories: general-purpose bombs and subscale practice bombs. Similar to missiles, bombs are further classified according to their net explosive weights.

- **General-Purpose Bombs:** General-purpose bombs consist of precision-guided and unguided full-scale bombs, ranging in size from 250 to 2,000 lb. (Figure H-14). Common bomb nomenclature used includes: MK 80 series, which is the Navy's standard model; Guided Bomb Units and Joint Direct Attack Munitions, which are precision guided (including laser guided) bombs; and the Joint Standoff weapon, which is a long-range "glider" precision weapon. General-purpose bombs can be either non-explosive practice munitions or high-explosive.



Figure H-14: F-35 Bomb Release and Loading General Purpose Bombs

- **Subscale Bombs:** Subscale bombs (Figure H-15) are non-explosive practice munitions containing a spotting (smoke) charge to aid in scoring the accuracy of hitting the target during training and testing activities. Common subscale bombs are 25 lb. and less and are steel-constructed. Laser guided training rounds are another variation of a subscale practice bomb. They weigh approximately 100 lb. and are cost-effective non-explosive weapons used in training aircrew in laser-guided weapons employment.



Figure H-15: Subscale Bombs for Training

Other Munitions. There are other munitions used in naval at-sea training and testing events that do not fit into one of the above categories, and are discussed below:

- **Demolition Charges:** Divers place explosive charges in the marine environment during some training and testing activities. These activities may include the use of timed charges, in which the charge is placed, a timer is started, and the charge detonates at the set time. Munitions of in up to, and sometimes exceeding, 60 lb. blocks of composition 4 (C-4) plastic explosive, with the necessary detonators and cords, are used to support mine neutralization, demolition, and other warfare activities. All demolition charges are further classified according to the net explosive weight of the charge.
- **Torpedoes:** Explosive torpedoes are required in some training and testing events. Torpedoes are described as either lightweight or heavyweight and are further categorized according to the net explosive weight.
- **Mines:** Naval mines are deposited and left in place until triggered by the approach of an enemy ship or are destroyed or removed. Naval mines can be laid by purpose-built minelayers, other ships, submarines, or airplanes.
- **Loitering Munitions:** UAS or USV weapons designed for remotely controlled or autonomous operation, with long dwell times and precision targeting. Loitering munitions are designed as non-recoverable unmanned vehicles with explosive charges built in that can be launched from land or at sea, typically by small boats or ships. During terminal phase, after a target has been identified, the loitering munition acts similarly to a bomb or missile to destroy or incapacitate its target.

H.1.3 TARGETS

Training and testing require an assortment of realistic and challenging targets. Targets vary from items as simple and ordinary as an empty steel drum used for small-caliber weapons training from the deck of a ship, to sophisticated, unmanned aerial drones used in air defense training. For this EIS/OEIS, targets are organized by warfare area.

Air Warfare Targets: Air warfare targets, tow target systems, and aerial targets, are used in training and testing events that involve detection, tracking, defending against, and attacking enemy missiles and aircraft. Aerial tow target systems include textile (nylon banner) and rigid (fiberglass shapes) towed targets used for gunnery events. Aerial targets include expendable rocket powered missiles and recoverable radio-controlled drones used for gunnery and missile exercises (Figure H-16, Figure H-17, and Figure H-18). Aerial targets and missiles are frequently launched from land; in the HCTT Study Area, launch sites are located at San Nicolas Island (SNI) and San Clemente Island (SCI) off the coast of Southern California and the Pacific Missile Range Facility (PMRF) on the island of Kauai in Hawaii. Parachute flares are used as air-to-air missile targets. Manned high-performance aircraft may be used as targets—to test ship and aircraft defensive systems and procedures—without the actual firing of munitions.



Figure H-16: Deployment and Recovery of Air Warfare Targets



Figure H-17: BQM-177 (Aerial Target)



Figure H-18: LUU-2B/B Illuminating Flare (Aerial Target)

Surface Warfare Targets: Stationary and towed targets are used as surface warfare targets during gunnery events. Targets include floating steel drums, inflatable shapes or target balloons (e.g., Killer Tomato™) (Figure H-19), and towed sleds. Remote-controlled, high-speed targets, such as jet skis and motorboats, are also used (Figure H-20).

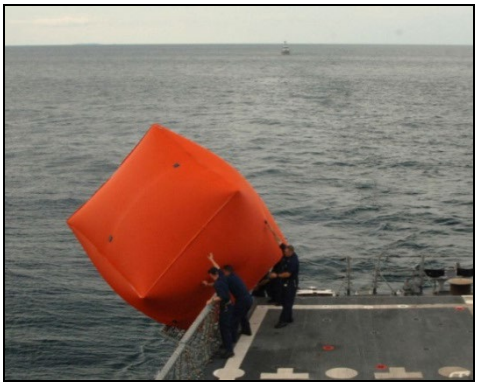


Figure H-19: Deploying a "Killer Tomato™" Floating Target



Figure H-20: Ship Deployable Surface Target and High-Speed Maneuverable Seaborne Target

Anti-Submarine Warfare Targets: Anti-submarine warfare uses multiple types of targets, including the following:

- **Submarines:** Submarines may act as tracking and detection targets during training and testing events.
- **Motorized Autonomous Targets:** Motorized autonomous targets simulate the acoustic and magnetic characteristics of a submarine, providing realism for exercises when a submarine is not available. These mobile targets resemble torpedoes, with some models designed for recovery and reuse, while other models are expendable.
- **Stationary Artificial Targets:** Stationary targets either resemble submarine hulls or are simulated systems with acoustic properties of enemy submarines. These targets either rest on the seafloor or are suspended at varying depths in the water column.

H.1.4 Defensive Countermeasures

Naval forces depend on effective defensive countermeasures to protect against missile and torpedo attack. Defensive countermeasures are devices designed to confuse, distract, and confound precision-guided munitions. Defensive countermeasures fall into five basic categories:

- **Chaff:** Chaff consists of reflective, aluminum-coated glass fibers used to obscure ships and aircraft from radar-guided systems. Chaff, which is stored in canisters, is either dispensed from aircraft or fired into the air from the decks of surface ships when an attack is imminent. The glass fibers create a radar cloud that masks the position of the ship or aircraft.

- **Flares:** Flares are pyrotechnic devices used to defend against heat-seeking missiles, where the missile seeks out the heat signature from the flare rather than the aircraft's engines. Similar to chaff, flares are also dispensed from aircraft and fired from ships.
- **Acoustic Countermeasures:** Acoustic countermeasures are used by surface ships and submarines to defend against torpedo attack (Figure H-21). Acoustic countermeasures are either released from ships and submarines or towed at a distance behind the ship.

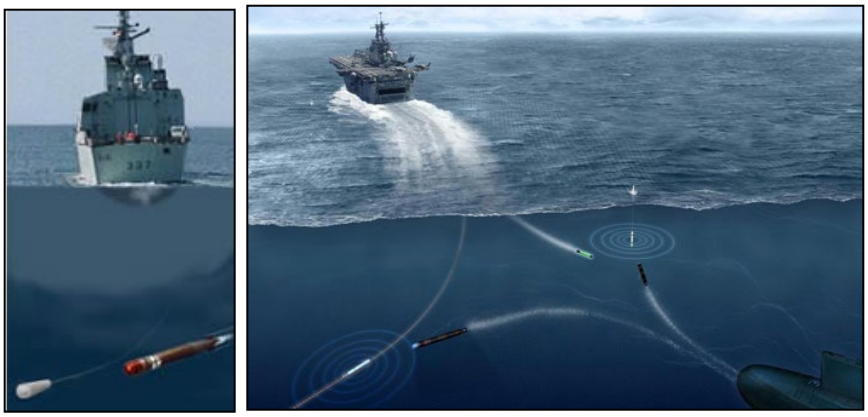


Figure H-21: Acoustic Countermeasures

- **Electromagnetic Countermeasures:** Electromagnetic countermeasures are used by surface ships and aircraft to defend against missile attacks. Electromagnetic countermeasures are also used in anti-submarine warfare activities.
- **Biodegradable Polymer:** Biodegradable polymer is a biodegradable vessel entanglement technology used to slow or stop specific maritime targets by entangling the propulsion mechanism.

H.1.5 MINE WARFARE

H.1.5.1 Training Mines

Training mines, also referred to as “mine shapes” or “mine countermeasure (MCM) targets,” are temporarily installed across mine warfare training areas in the Study Area. MCM targets contain no explosives but may contain instrumentation that can provide feedback during or after a training event. Training mines come in several shapes and sizes as shown in Figure H-22 and Figure H-23. Depending on the training objectives, specific MCM targets would be selected and placed at depths and locations appropriate to the training and the mine shape. See Section H.2 for locations of mine warfare training areas.



Figure H-22: Portfolio of Navy Training Mines

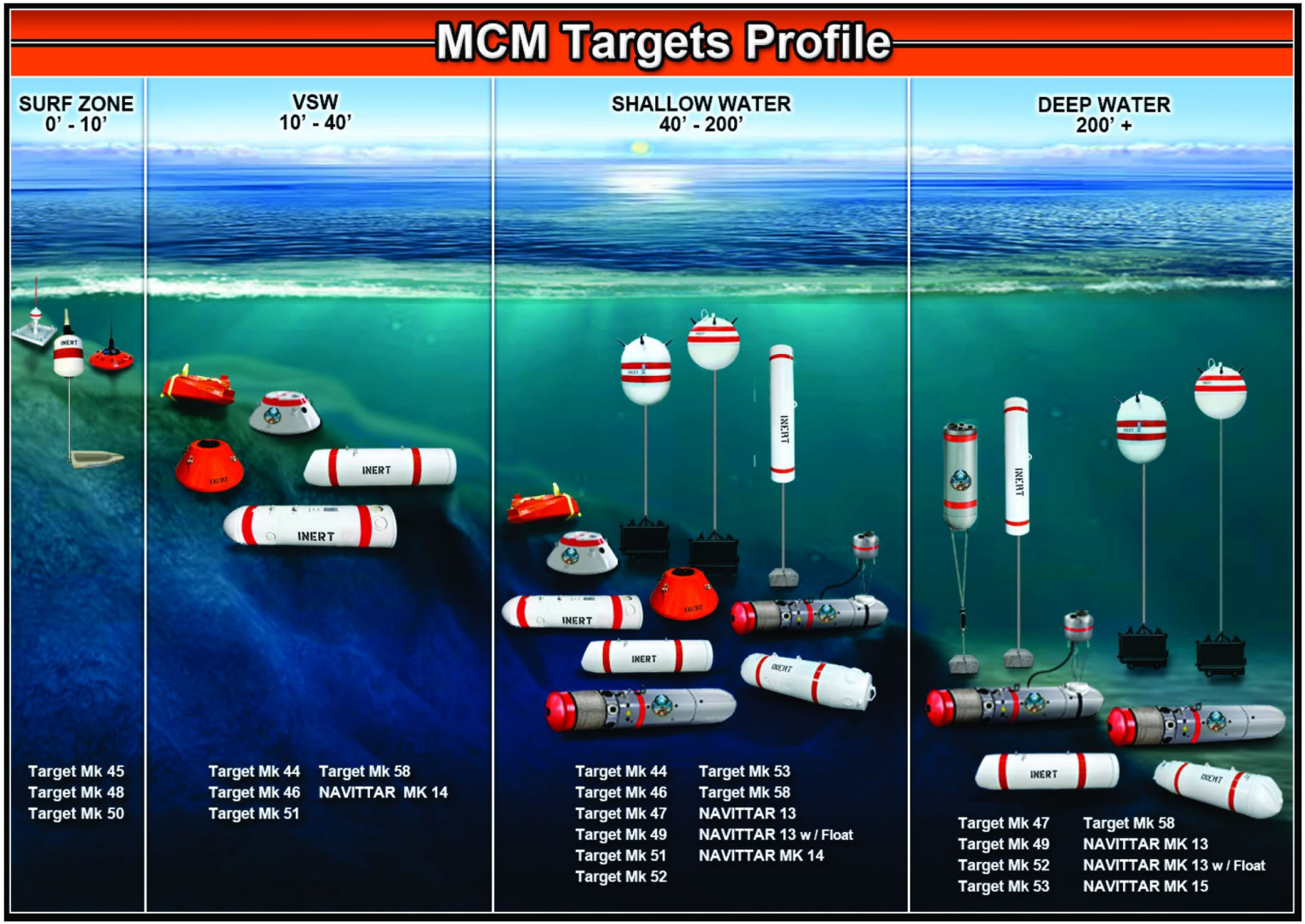


Figure H-23: Application (Location) of Navy Training Mines

H.1.5.2 Mine Warfare Systems

Mine warfare systems fall into two broad categories: mine detection and mine neutralization.

Mine Detection Systems. Mine detection systems are used to locate, classify, and map suspected mines. Once located, the mines can either be neutralized or avoided. These systems are specialized to either locate mines on the surface, in the water column, or on the seafloor.

- **Towed or Hull-Mounted Mine Detection Systems:** These detection systems use acoustic and laser or video sensors to locate and classify suspect mines. Ships and unmanned vehicles are used for towed systems, which can rapidly assess large areas (Figure H-24).



Figure H-24: Towed Mine Detection System

- **Airborne Laser Mine Detection Systems:** Airborne laser detection systems work in concert with neutralization systems. The detection system initially locates mines, and a neutralization system is then used to relocate and neutralize the mine (Figure H-25).

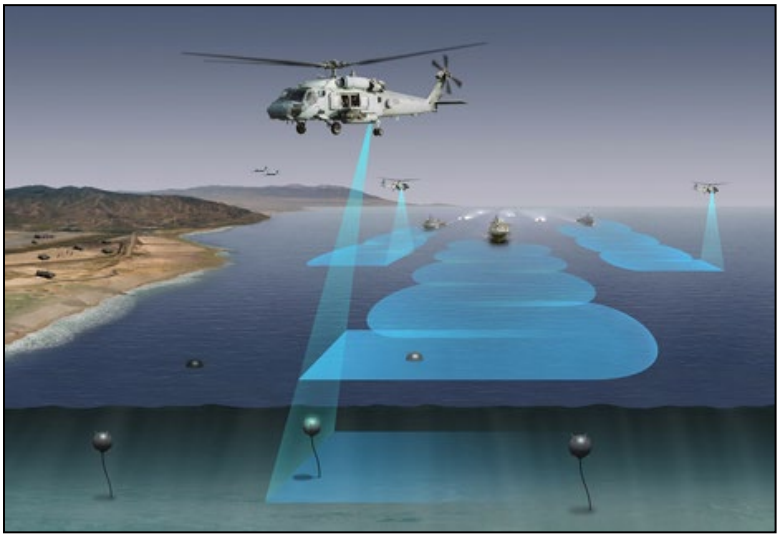


Figure H-25: Airborne Laser Mine Detection System

- **Unmanned/Remotely Operated Vehicles:** These vehicles use acoustic and video or lasers to locate and classify mines. Unmanned/remotely operated vehicles provide unique mine warfare capabilities in nearshore littoral areas, surf zones, ports, and channels.
- **Marine Mammal System:** Navy personnel and Navy marine mammals work together to detect specified underwater objects. The Navy deploys trained bottlenose dolphins as part of the marine mammal minehunting and object recovery system.
- **Dipping Mine Detection Systems:** Mine-hunting dipping sonar systems are deployed from helicopters and use high frequency sonar for the detection and classification of bottom and moored mines.

Mine Neutralization and Countermining Systems. These systems disrupt, disable, or detonate mines to clear ports and shipping lanes, as well as littoral, surf, and beach areas in support of naval amphibious operations. Mine neutralization systems can clear individual mines or many mines quickly.

- **Towed Influence Mine Sweep Systems:** These systems use towed equipment that mimic a particular ship's magnetic and acoustic signature triggering the mine and causing it to explode (Figure H-26).

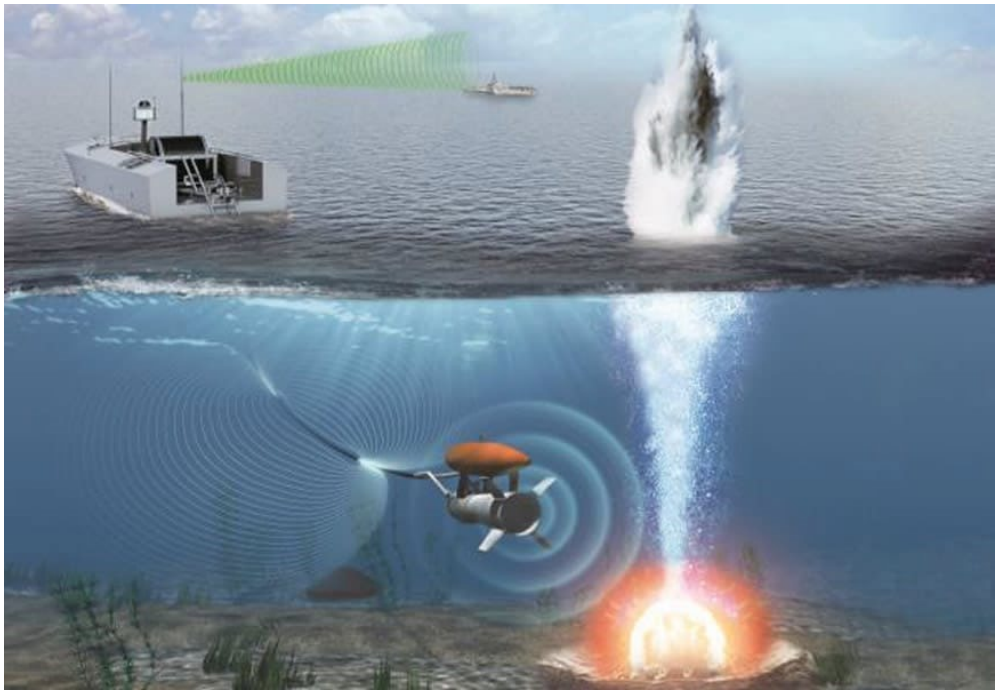


Figure H-26: U.S. Navy Unmanned Influence Sweep Minehunting System

- **Towed Mechanical Mine Sweeping Systems:** These systems tow a sweep wire to snag the line that attaches a moored mine to its anchor and then uses a series of cables and cutters to sever those lines. Once these lines are cut, the mines float to the surface where explosive ordnance personnel can neutralize the mines.
- **Unmanned/Remotely Operated Mine Neutralization Systems:** Surface ship and aircraft operate these systems, which place explosive charges near or directly against mines to destroy the mine (Figure H-27).

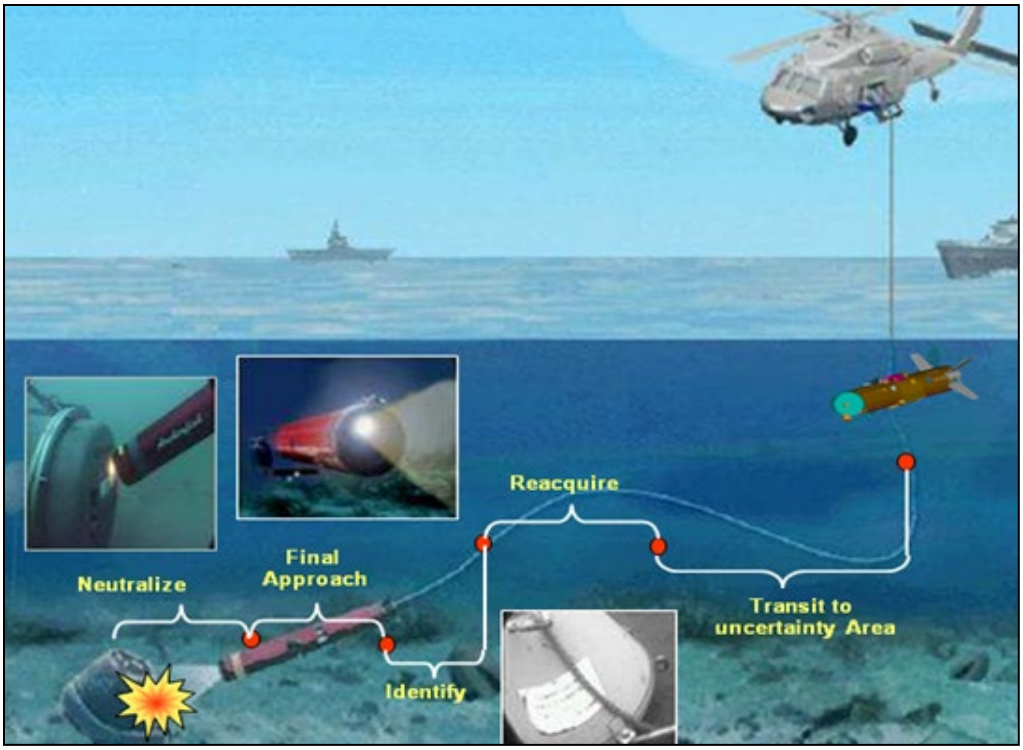


Figure H-27: Airborne Mine Neutralization System

- **Projectiles:** Small- and medium-caliber projectiles fired from surface ships or aircraft are used to neutralize floating and near-surface mines.
- **Diver Emplaced Explosive Charges:** Operating from small craft, divers place explosive charges, which may use time delay fusing, near or on mines to destroy the mine or disrupt its ability to function.
- **Other Systems:** Mat weave (charges laid in a pattern) are placed by Explosive Ordnance Personnel to destroy barriers or obstacles designed to block amphibious vehicle access to beach areas. Time delay fuses may be used on or near the mat weave. The Mine-Clearing Line Charge is a rocket-projected device used to create a breach in minefields. Many charges are connected on a line to be projected onto a minefield and then exploded, detonating buried mines.

H.1.6 Military Expended Materials

Navy training and testing events may introduce or expend various items, such as non-explosive munitions and targets, into the marine environment as a direct result of using these items for their intended purpose. In addition to the items described below, some accessory materials—related to the carriage or release of these items—may be released. These materials, referred to as military expended materials, are not recovered, and potentially result in environmental impacts. These impacts are analyzed in detail in Chapter 3 (Affected Environment and Environmental Consequences) of this EIS/OEIS. This section includes descriptions of a representative sample of military expended materials. A more comprehensive discussion can be found in Chapter 3 (Affected Environment and Environmental Consequences).

Military expended materials analyzed in this document include the following:

- **Sonobuoys:** Sonobuoys consist of decelerators/parachutes, wires, and the sonobuoys themselves.
- **Bathythermographs:** Bathythermographs as used by the Navy are similar to sonobuoys in that they consist of decelerators/parachutes, wires, and the buoy themselves. In the case of bathythermographs, the buoys are used to measure temperature information of the water column and transmit that information to the platform (usually a ship or aircraft) that deployed the bathythermograph.
- **Torpedo Launch Accessories:** Torpedoes are usually recovered; however, materials such as decelerators/parachutes used with air-dropped torpedoes, guidance wire used with submarine-launched torpedoes, and ballast weights are expended. Explosive filled torpedoes expend torpedo fragments.
- **Projectiles and Bombs:** Non-explosive projectiles, non-explosive bombs, or fragments from explosive projectiles and bombs are expended during training and testing exercises. These items are primarily constructed of lead (most small-caliber projectiles) or steel (medium- and large-caliber projectiles and all bombs).
- **Blank Ammunition:** Blank ammunition is used in some training activities when the sound or flash of gunfire adds to the realism of the training activity, but safety of personnel or nearby civilians is critical. Blank ammunition contains gunpowder, but no projectile is sent downrange upon firing the weapon. Casings are expended as a result of firing blank ammunition.
- **Missiles, Rockets, and Loitering Munitions:** Non-explosive missiles and missile fragments from explosive missiles are expended during training and testing events. Propellant, and any explosive material involved, is consumed during firing/detonation. Some missiles include a wire, which is also expended. Rockets are similar to missiles and both non-explosive and fragments may be expended.
- **Countermeasures:** Countermeasures (acoustic, chaff, flares, biodegradable polymer) are expended as a result of training exercises, with the exception of towed acoustic countermeasures. Chaff activities also include an expended canister, end caps, and pistons. Flares expend only end caps and pistons.
- **Targets:** Some targets are designed to be expended; other targets, such as aerial drones and remote-controlled boats, are recovered for re-use. Targets struck with ordnance will result in target fragments.

H.2 STUDY AREA DESCRIPTION

The HCTT EIS/OEIS Study Area (Study Area) consists primarily of the Hawaii Study Area, the California Study Area, and the Transit Corridor connecting the two (Figure H-28). When compared to the Study Area analyzed in the 2018 Hawaii-Southern California Training and Testing EIS/OEIS (Phase III), the geographic boundary of the Hawaii Study Area is unchanged, but the California Study Area has been expanded.

H.2.1 THE HAWAII STUDY AREA

The Hawaii Study Area shown in Figure H-29 is comprised of the Hawaii Range Complex and the Temporary Operating Area (TOA).

H.2.1.1 The Hawaii Range Complex

Nearly all the training and testing activities in the Hawaii Study Area take place within the Hawaii Range Complex (Figure H-30), the area that immediately surrounds the island chain from Hawaii to Kauai (Figure H-31 through Figure H-33). The Hawaii Range Complex consists of 115,000 square nautical miles (NM^2) of special use airspace (Table H-1) and 235,000 NM^2 of sea and undersea space, including 1,100 NM^2 of instrumented underwater ranges at the PMRF. Within the Hawaii Range Complex are areas where specific training and testing activities occur, generally centered around the islands of Kauai, Oahu, and Maui.

H.2.1.1.1 Pacific Missile Range Facility Training and Testing Areas

See Table H-2 and Figure H-31 for descriptions of training and testing areas around Kauai.

H.2.1.1.2 Training and Testing Areas Around Oahu

See Table H-3 and Figure H-32 for descriptions of training and testing areas around Oahu.

H.2.1.1.3 Training and Testing Areas Around Maui

See Figure H-33 for descriptions of training and testing areas around Maui.

H.2.1.2 The Temporary Operating Area

The TOA, extending north and west from the island of Kauai and comprising over 2 million NM^2 of air and sea space, is used for Research, Development, Test & Evaluation activities such as missile testing by PMRF. For safety purposes, PMRF requests use of the airspace within the TOA from the Federal Aviation Administration (FAA) during times of missile defense testing. During testing, PMRF will control the airspace and the FAA will temporarily restrict an area of airspace within the TOA (typically not the entire area) until testing is complete. Due to the range and speed of weapons and missiles, this large area is required to ensure a safety area in which debris or expended materials could fall with minimal risk of damage or injury to humans. Training in the TOA can include live missile firing associated with ballistic missile defense exercises, and during vessel transits.

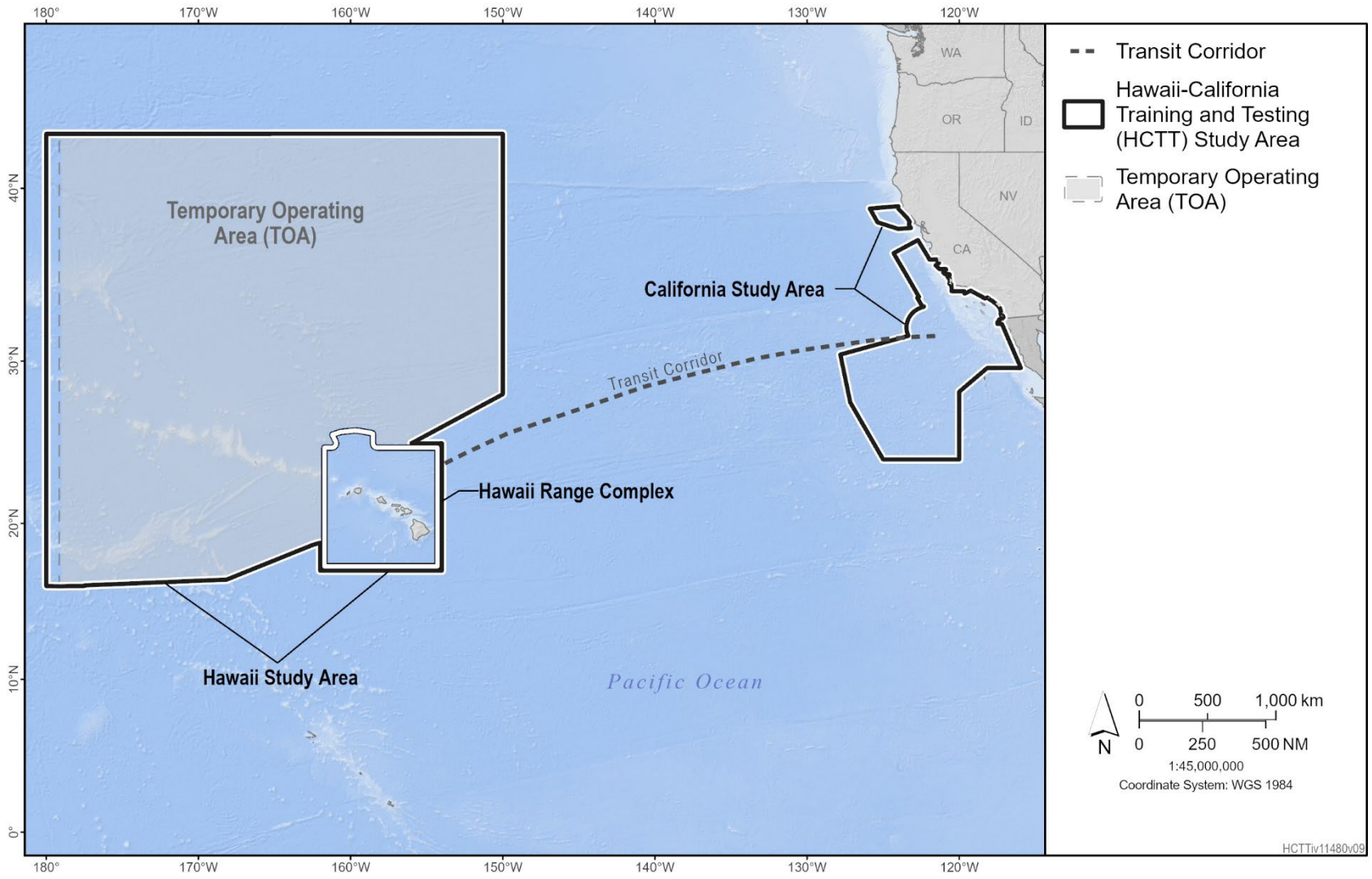


Figure H-28: The Hawaii-California Training and Testing Study Area

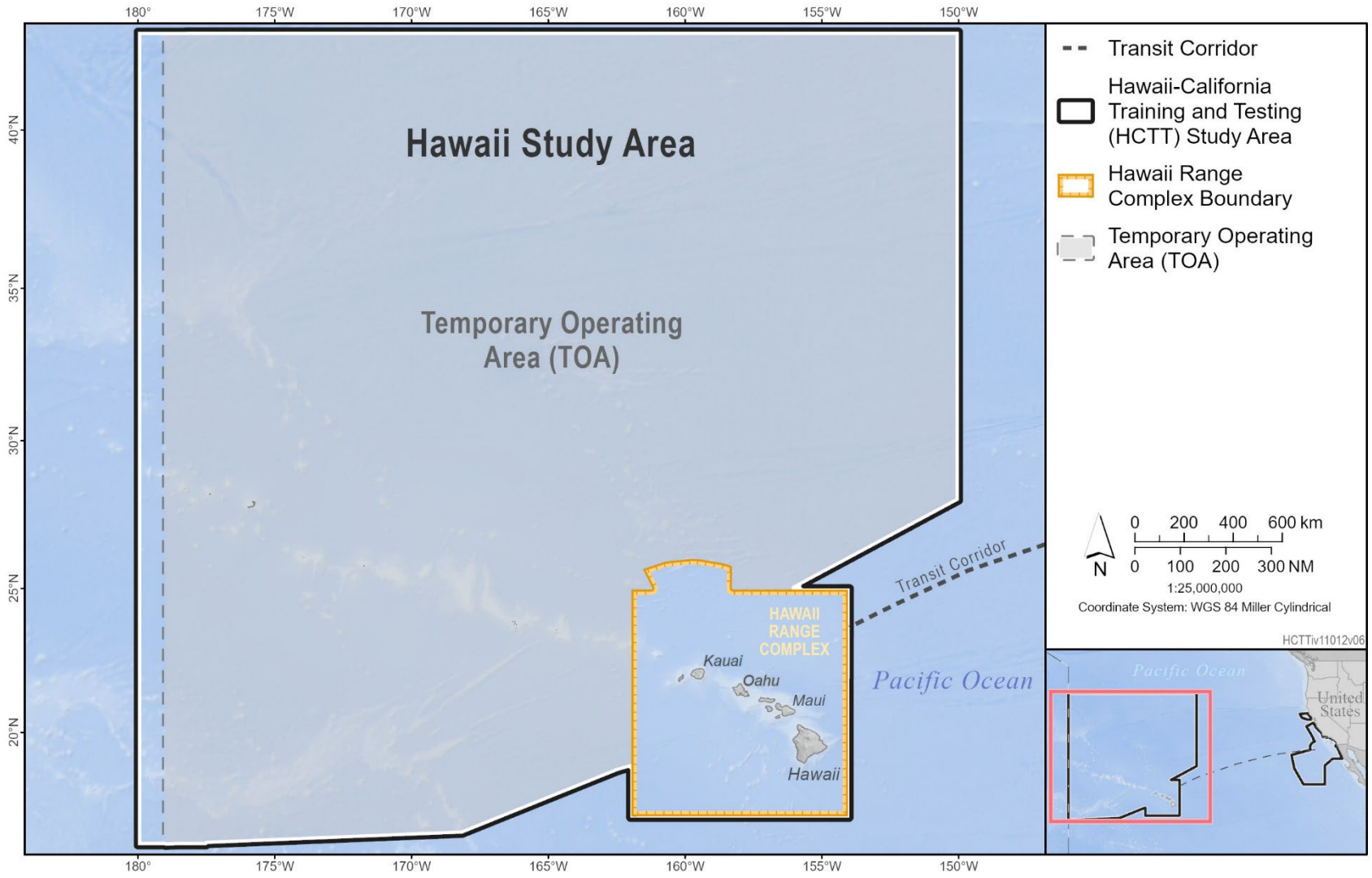


Figure H-29: The Hawaii Study Area

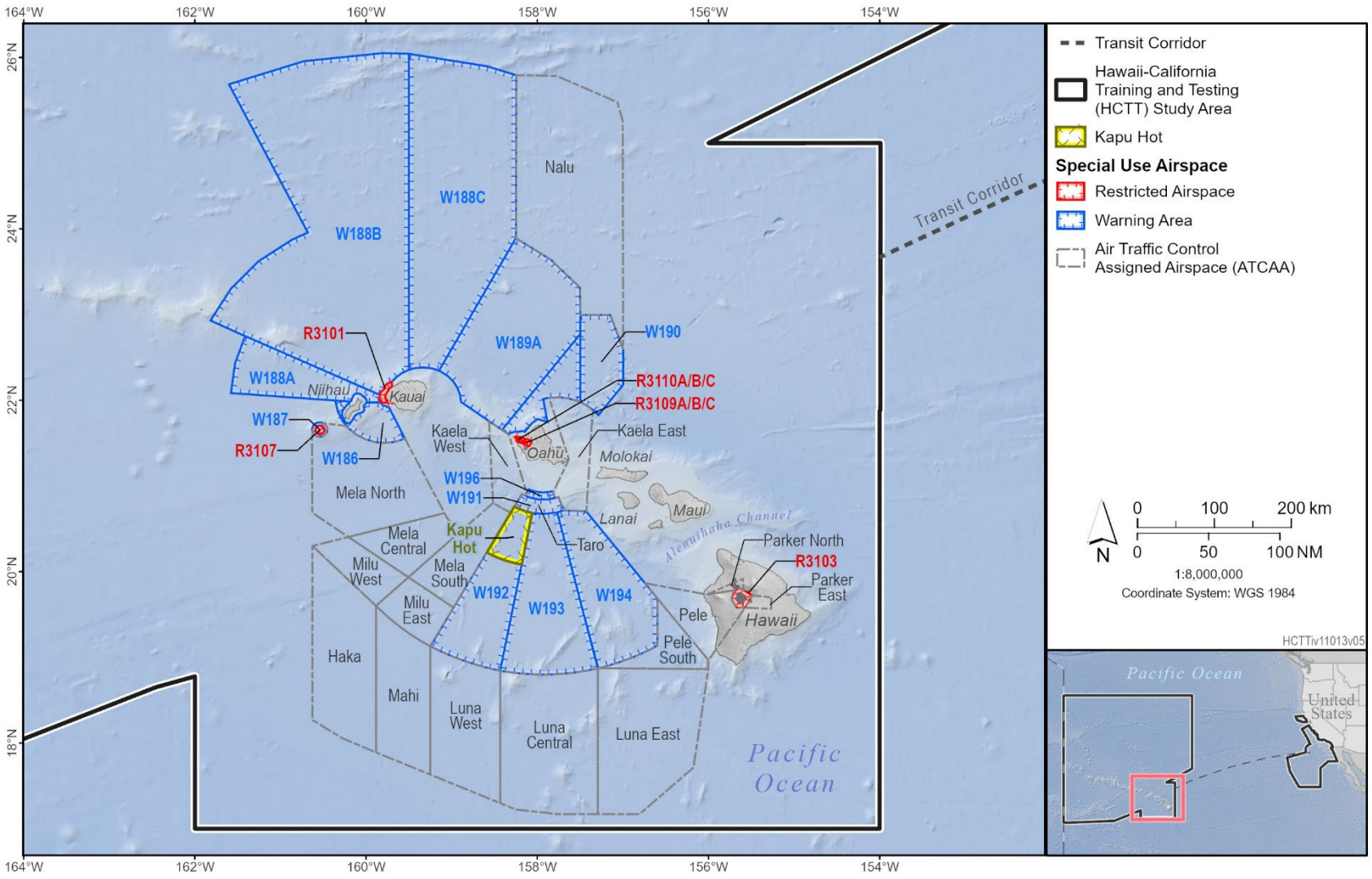


Figure H-30: Hawaii Range Complex

Table H-1: Hawaii Range Complex Airspace Descriptions

Area Name	Area Description
Northern Warning Areas	
W-188 Rainbow, W-189, W-190	The Northern Warning Areas lie north of Oahu. These areas are available from the surface to an unlimited altitude and are used for surface and air operations.
Southern Warning Areas	
W-192, W-193, W-194	The Southern Warning Areas are located south of Oahu. These areas are available from the surface to an unlimited altitude and are used for surface and air operations.
W-191	W-191, located directly south of Oahu, is available from the surface to 3,000 feet (ft.) for air and surface operations.
W-196	W-196 is used only for surface and helicopter operations. The airspace extends from the surface to 2,000 ft. and is not available to fixed-wing aircraft.
Kapu Hot	Kapu Hot, located within W-192, is the primary live-fire range in the Hawaii Range Complex. Kapu Hot has a standing Local Notice to Mariners for the conduct of live-fire operations.
Air Traffic Control Assigned Airspace (ATCAA)	
Nene	Nene is the only ATCAA associated with the Northern Warning Areas. It is typically activated for use during Hawaii Air National Guard intercept training.
Pali	Pali is a roughly 40-nautical-mile (NM) circular area over Oahu, from 25,000 ft. to an unlimited altitude, although it is normally not available below 28,000 ft. Pali is used by high-altitude aircraft transiting between the Northern and Southern Warning Areas.
Taro	Taro overlies W-191, sharing the same borders and, when available, extending its airspace from 3,000 ft. to 16,000 ft. This airspace allows aircraft to remain in controlled airspace while testing above W-191's 3000 ft. ceiling.
Quint	Quint is located 45 nm southwest of Honolulu, with available airspace from flight level (FL) 250 to an unlimited altitude, although it is usually not available below FL 280.
Mela North, Mela Central, Mela South	The Mela ATCAAs connect the western border of W-192 with the southern border of W-186 (Pacific Missile Range Facility [PMRF]). They are available from the floor of controlled airspace (1,200 ft) to an unlimited altitude, except for Mela North, which has a ceiling of 15,000 ft.
Pele and Pele South	Pele provides a transit corridor from W-194 and Lono East into R-3103 airspace over Pohakuloa Training Area on Hawaii. When activated, Pele extends from 16,000 ft. to FL 290.
Milu (East & West), Haka, Mahi, Luna (West, Central, & East)	These ATCAAs are used along with the southern special use airspace (SUA) for air and surface operations. When activated, each area extends from 5,500 ft. to unlimited.
Nalu	Nalu is used along with the northern SUA for air and surface operations. When activated, the airspace extends from 5,500 ft. to FL 290.

Area Name	Area Description
Kaela (West & East)	Situated to the west and east of Oahu, these ATCAAs are used only during Rim of the Pacific exercises to facilitate movement between the North and South sections of the Hawaii Range Complex. When activated, the airspace extends from FL 250 to FL 290.
Kaula	
R-3107, W-187	Kaula is a 0.5 NM by 0.7 NM island surrounded by a 3 NM radius restricted area (R-3107), and a 5 NM radius warning area (W-187). Both R-3107 and W-187 extend from surface to 18,000 ft.

Table H-2: PMRF Training and Testing Area Descriptions

Area Name	Area Description
Barking Sands Tactical Underwater Range (BARSTUR)	BARSTUR is an instrumented underwater range that provides approximately 120 square nautical miles (NM^2) of underwater tracking of participants and targets.
Barking Sands Underwater Range Expansion (BSURE)	BSURE extends BARSTUR to the north, providing an additional 900 NM^2 of underwater tracking capability.
W-186, W-188	W-186 is warning airspace that extends from surface to 9,000 feet, and W-188 extends from surface to unlimited.
R-3101	R-3101 is restricted airspace that extends from surface to unlimited and provides necessary airspace to support training and Research, Development, Test, and Evaluation operations at Pacific Missile Range Facility.
Kingfisher Training Minefield	Kingfisher Training Minefield has historically provided training to surface warfare units in mine detection and avoidance. The range consisted of mine-like shapes moored to the ocean bottom by cables, but there are currently no permanent shapes in place. Placement of temporary mine training shapes would occur if this capability becomes needed.
Waiapuaa Beach	Waiapuaa Beach provides nearshore underwater space for mine detection training using divers, unmanned underwater vehicles (UUVs), remotely operated vehicles (ROVs), Airborne Laser Mine Detection Systems (ALMDS), Airborne Mine Neutralization System (AMNS) (non-explosive only). Airspace is laser certified. No permanent shapes are installed in this area.
PMRF Training Area	The PMRF Training Area provides nearshore underwater space for mine detection training using divers, UUVs, ROVs, ALMDS, AMNS (non-explosive only). No permanent shapes are installed in this area.

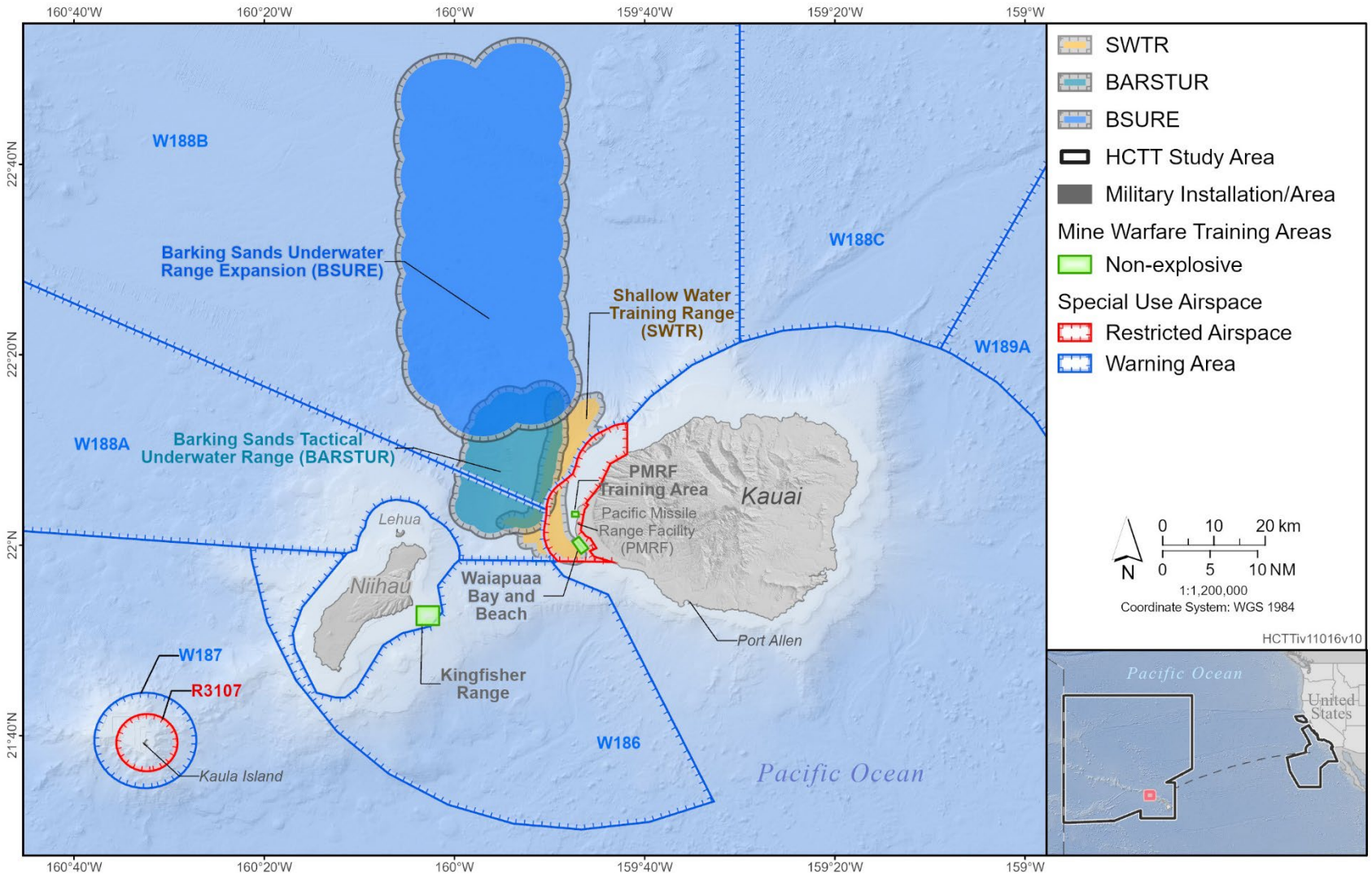


Figure H-31: Training and Testing Areas Around Kauai

Table H-3: Training and Testing Area Descriptions Around Oahu

Area Name	Area Description
Barbers Point Harbor to Lighthouse Training Area	The Barbers Point Harbor to Lighthouse Training Area provides nearshore underwater space for mine detection training and Civilian Port Defense training which includes the use of unmanned underwater vehicles (UUVs), remotely operated vehicles (ROVs), Airborne Mine Neutralization System (AMNS) and divers. No permanent shapes would be installed.
Barbers Point Underwater Range	The Barbers Point Underwater Range provides nearshore water space for mine neutralization training and underwater mine countermeasure raise, tow, beach, and exploitation.
Bellows Beach	Bellows Beach provides an amphibious landing site and nearshore water space for mine detection training using UUVs and ROVs, including airborne mine countermeasure training.
Ewa Training Minefield	The Ewa Training Minefield is an ocean area extending from Ewa Beach approximately 2 nautical miles (NM) toward Barbers Point, and out to sea approximately 4 NM. The area supports mine neutralization training, which includes UUV, ROV, divers, AMNS (explosive), and underwater mine countermeasure raise, tow, beach, and exploitation. No permanent shapes are installed in this area.
Fleet Operational Readiness Accuracy Check Site (FORACS)	The FORACS range is an approximately 5 NM by 5 NM ocean area just offshore of the southwestern coast of Oahu, near Nanakuli, and includes the Surface Ship Radiated Noise Measurement System. The electronic equipment at this site provides sensor accuracy checks and calibrations for sonar, radar, navigation, electronic counter measures, and other ship systems.
Kaneohe Bay	Non-explosive training mines could be placed in Kaneohe Bay, providing mine detection training which includes the use of divers, UUVs, and ROVs. Includes civilian port defense, transit through Kaneohe Bay, and underwater mine countermeasure raise, tow, beach, and exploitation training.
Lima Landing	Explosive Ordnance Disposal divers conduct in-water explosives and demolition training at Lima Landing.
Marine Corps Base Hawaii	Small-scale amphibious training is conducted along the coastal areas of the base.
Marine Corps Training Area Bellows (MCTAB)	Amphibious training is conducted at MCTAB.
Naval Defensive Sea Area	Located outside the mouth of Pearl Harbor, the Naval Defensive Sea Area provides a shallow-water ocean area clear from non-military vessel traffic. Temporary mine shapes could be placed for training involving divers, UUVs, and ROVs conducting civilian port defense and underwater mine countermeasure raise, tow, beach, and exploitation training.
Pearl Harbor Naval Shipyard	Located within Pearl Harbor, where some activities like pierside sonar testing can occur.
Pearl Peninsula	Navy personnel conduct training involving small explosive charges at Victor pier on the south end of Pearl Peninsula, inside Pearl Harbor.

Area Name	Area Description
Puuloa Underwater Range	The Puuloa Underwater Range is a 1-square nautical mile area in the open ocean outside and to the west of the entrance to Pearl Harbor. Explosives training for divers, UUVs, and ROVs occurs here, with explosive charges up to 20 pounds net explosive weight. Could include underwater mine countermeasure raise, tow, beach, and exploitation training.
Shipboard Electronic Systems Evaluation Facility (SESEF)	The SESEF range, located off Barbers Point on Oahu, provides state-of-the-art test and evaluation of combat systems that radiate or receive electromagnetic energy. Ships operate and maneuver in this area as necessary to remain within electronic signal reception range of an associated shore facility.
Wave Energy Test Site (WETS)	At WETS, the Navy tests marine energy devices such as wave energy converters and conducts environmental monitoring of systems under test. The area has been expanded to test distribution of power to allow for autonomous system charging and testing.

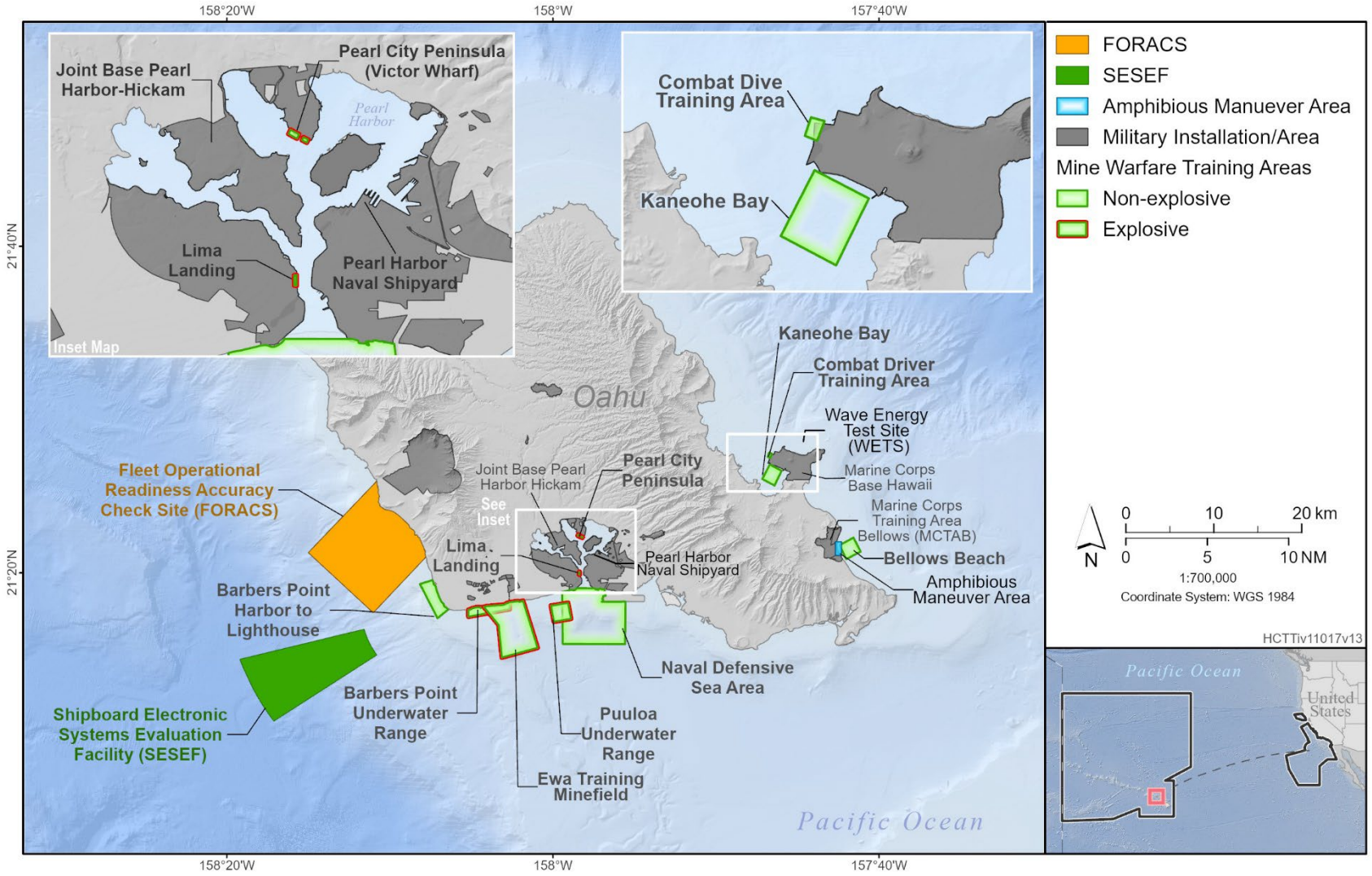


Figure H-32: Training and Testing Areas Around Oahu

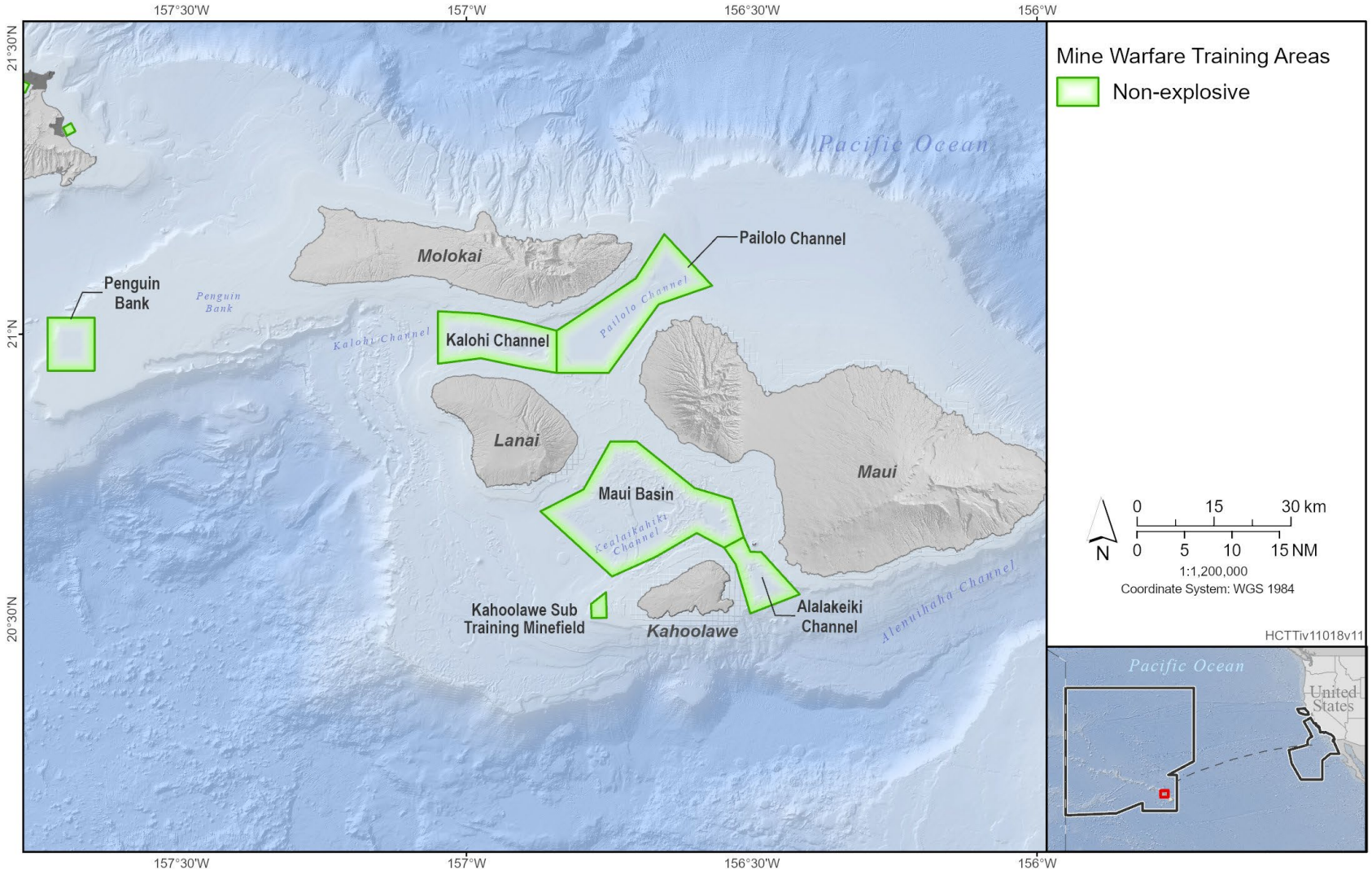


Figure H-33: Training and Testing Areas Around Maui

H.2.2 THE CALIFORNIA STUDY AREA

The California portion of the Study Area, referred to as the California Study Area (Figure H-34), is comprised of the Southern California (SOCAL) Range Complex, the Silver Strand Training Complex (SSTC), the Point Mugu Sea Range (PMSR), and the Northern California (NOCAL) Range Complex.

H.2.2.1 The Southern California Range Complex

The two primary components of the SOCAL Range Complex (Table H-4 and Figure H-35) are the ocean Operating Areas and the special use airspace. The airspace in the SOCAL Range Complex was originally developed to support a previous generation of aircraft, weapons and tactics. Today, the SOCAL Range Complex is still used as the tactical cornerstone for training and certifying all deploying Strike Groups in the Pacific. However, due to current airspace configuration constraints, the air and sea space no longer meets naval aviation training requirements conducted off the coast of Southern California. In addition, test parameters of a specific proposed testing activity require an area southwest of PMSR and north of the current SOCAL Range Complex boundary. Therefore, the Navy is proposing to expand the Study Area of the SOCAL Range Complex as depicted in Figure H-34. With the new extensions the proposed Study Area would encompass 217,000 NM^2 of sea space and 210,000 NM^2 of special use airspace. In addition, sea space in northwestern portion of the extension has been designated to facilitate testing activities by the Office of Naval Research (ONR). Testing activities conducted by ONR are described in Appendix A (Activity Descriptions). The various air and sea ranges associated with SCI are shown in Table H-5 and Figure H-37. The SOCAL Range Complex includes instrumented underwater training ranges, mine training ranges, laser training ranges, and access to the seaside of Naval Base Point Loma. The Study Area also extends to the pierside locations at Naval Base Point Loma and Naval Base San Diego.

The SOCAL Range Complex includes the SCI Range Complex, an integrated set of training areas and ranges located on and adjacent to SCI.

H.2.2.2 The Silver Strand Training Complex

The SSTC is an integrated set of training areas (Table H-6) located on and adjacent to the Silver Strand, a narrow, sandy isthmus separating the San Diego Bay from the Pacific Ocean. It is divided into two non-contiguous areas: SSTC-North and SSTC-South (Figure H-38). Training activities occur on the seaside of the Silver Strand and in San Diego Bay (bayside).

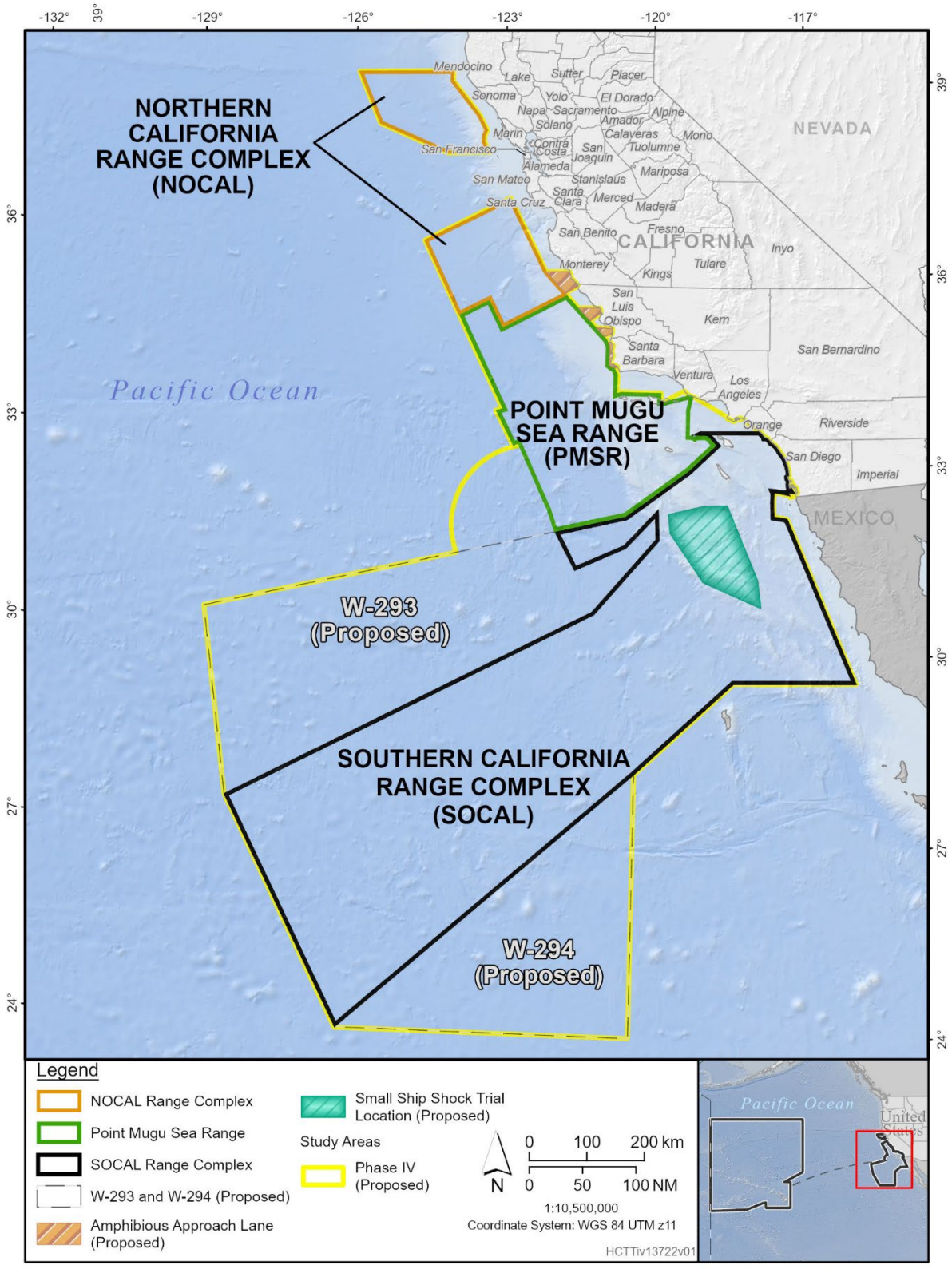


Figure H-34: The California Study Area

Table H-4: Southern California Range Complex Area Descriptions

Area Name	Area Description
Advanced Research Projects Agency (ARPA) Training Minefield	Located west of the La Jolla area of San Diego within the ENETA, the ARPA Training Minefield extends from the ocean bottom to the surface. Mine detection and avoidance exercises are conducted. Ordnance use is not permitted.
Airborne Mine Countermeasure (AMCM) Training Range	The AMCM Training Range, located off the coast of Imperial Beach, CA, is used for mine countermeasure training and aerial minesweeping. Underwater explosives up to 3.5 pounds net explosive weight may be authorized.
Camp Pendleton Amphibious Assault Area (CPAAA)	CPAAA is an open ocean area located approximately 40 nautical miles northwest of Naval Base Coronado (NBC), used for amphibious operations (Figure H-35). Ordnance use is not permitted.
Camp Pendleton Amphibious Vehicle Training Area (CPAVA)	CPAVA is an ocean area adjacent to the shoreline of Camp Pendleton used for amphibious operations and associated training.
Encinitas Electronic Training Area (ENETA)	The ENETA extends from the ocean bottom up to 700 feet (ft.) mean sea level (MSL) (Figure H-35). Exercises conducted include Fleet training and testing. Ordnance use is not permitted.
Fleet Training Area (FLETA) HOT	FLETA HOT is an open ocean area that extends from the ocean bottom to 80,000 ft. (Figure H-35). The area is used for hazardous operations, primarily surface-to-surface, surface-to-air, and air-to-air ordnance. Types of exercises conducted include Anti-Air Warfare, anti-submarine warfare (ASW), Naval Special Warfare, underway training, and Independent Steaming Exercises in which ships conduct onboard training, separate from other units. Ordnance use is permitted.
Helicopter Offshore Training Area (HCOTA)	Located in the ocean area off San Diego, the Helicopter Offshore Training Area is divided into "dipping areas" and extends from the surface to 700 ft. MSL. This area is designed for search and rescue and ASW training for helicopters with dipping sonar. Ordnance use is not permitted.
Imperial Beach Mine Training Range	The Imperial Beach Minefield is a concurrent use mine training range located off the coast of Imperial Beach, CA. It extends from the seafloor to the surface and is primarily used for mine detection, identification, and neutralization of bottom and tethered mine shapes.
Navy Test Area	Located offshore near Naval Base Point Loma, the Navy Test Area is a nearshore area used for in-water testing.
Ocean Beach Mine Training Area	Located approximately four miles west of the Ocean Beach and Point Loma area of San Diego, the Ocean Beach Mine Training Area is utilized for shallow water mine detection training and testing.
Shallow Water Training Ranges (SWTRs)	Tanner Bank SWTR and San Clemente Island SWTR are planned training ranges that will be instrumented with underwater hydrophones. This range would be used to evaluate the performance of aircraft, ships, and submarines conducting ASW training.
Tanner Bank Minefield	Located in the Tanner and Cortes Banks areas, the Tanner Bank Minefield is utilized for shallow water mine detection training and testing. Mine warfare training in this area has expanded beyond the boundaries depicted in Figure H-35, but remains contained within the proposed Tanner Bank SWTR.
Transit Lane	W-291 includes seven transit lanes that extend from the surface to 80,000 ft. MSL and provides Beaver a 5 nautical mile-wide corridor to transit users to and from the Operating Areas in the southern portion of the SOCAL Range Complex.
Warning Area (W-291)	W-291 encompasses 113,000 square nautical miles located off of the Southern California coastline, extending from the ocean surface to 80,000 ft. above MSL. W-291 supports aviation training and Research, Development, Test, and Evaluation conducted by all aircraft in the Navy and Marine Corps inventories. Ordnance use is permitted.

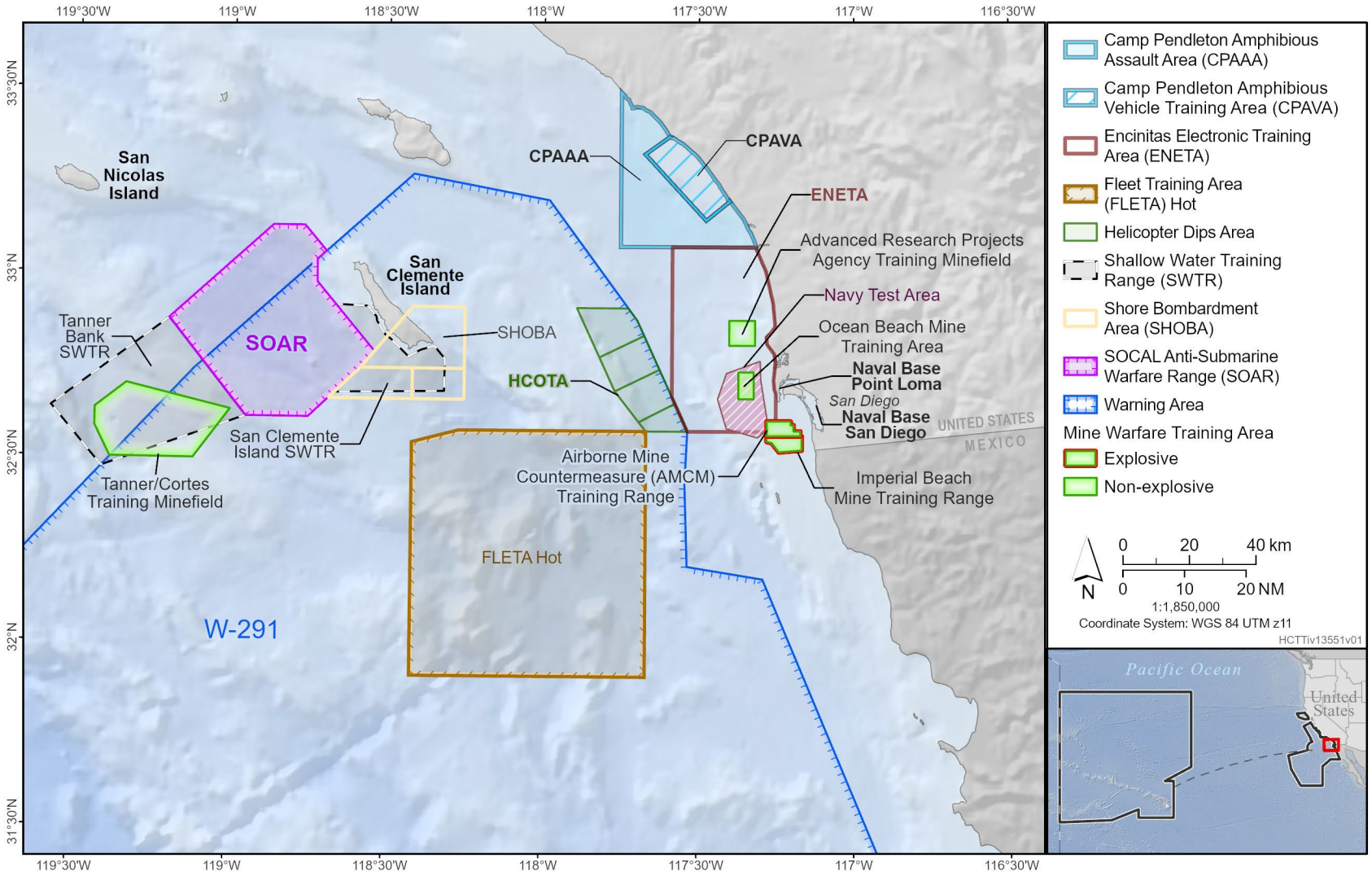


Figure H-35: Southern California Range Complex

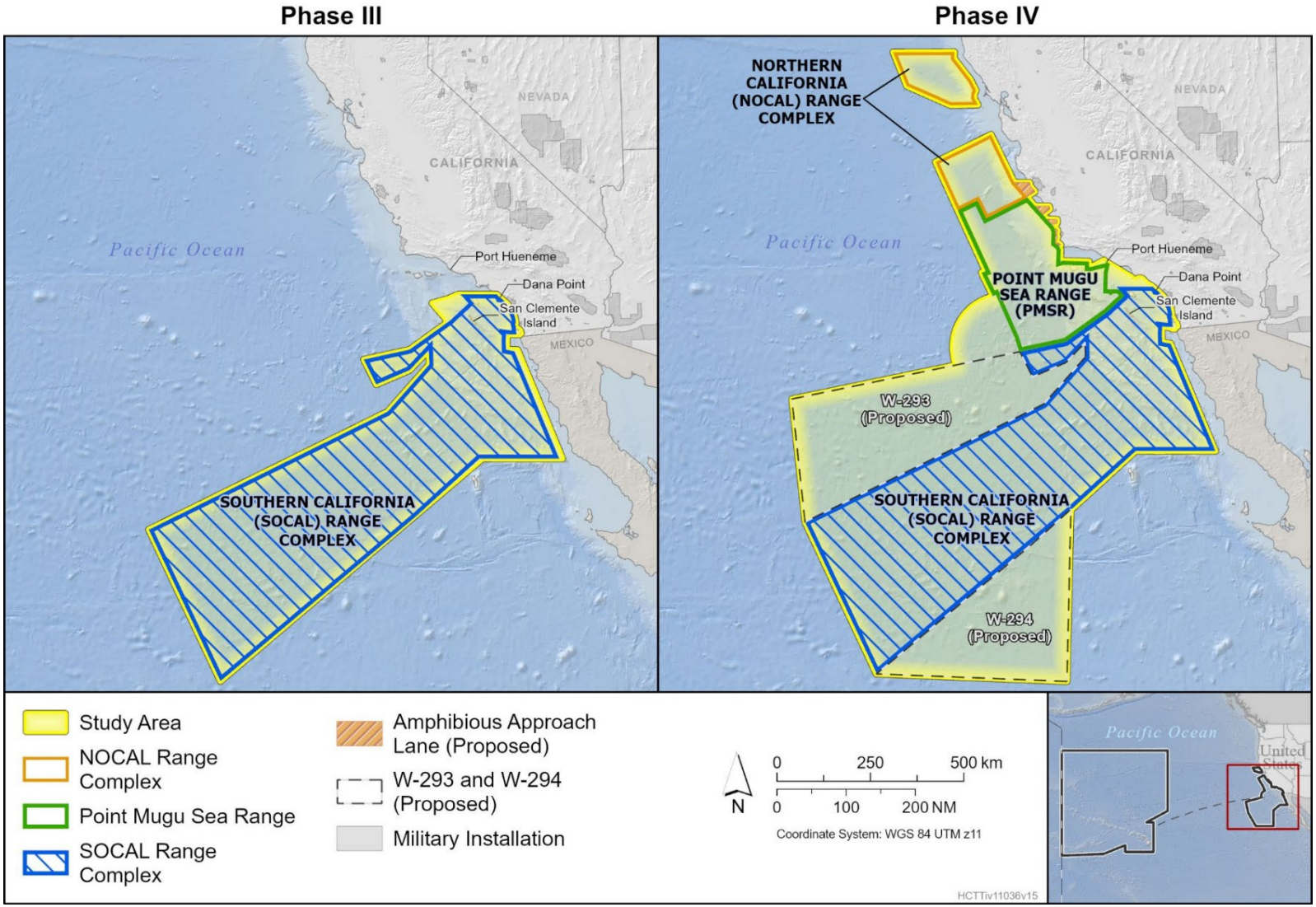


Figure H-36: Proposed Southern California Range Complex Expansion

Table H-5: San Clemente Island Offshore Training and Testing Area Descriptions

Area Name	Area Description
Mine Training Range (MTR)	Two MTRs and two mine laying areas are established in the nearshore areas of San Clemente Island (SCI). MTR-1 is the Castle Rock Mining Range off the northwestern coast of the island. MTR-2 is the Eel Point Mining Range off the midpoint of the southwestern side. These ranges are used for training of aircrews in offensive mine laying by delivery of inert mine shapes (no explosives) from aircraft. Underwater detonations up to 300 pounds (lb.) net explosive weight (NEW) are authorized.
Pyramid Cove Mine Training Range	This mine training range is located south of SCI and is used primarily for mine countermeasures training, mine detection, and neutralization of bottom and moored mine shapes. It includes a semi-permanent target minefield primarily for mine detection training using ALMDS. This range also includes the former China Point Mining Range, off the southwestern point of the island, and the Pyramid Head Mining Range, off the island's southeastern tip, to support training of aircrews in offensive aerial mine laying by delivery of live and inert mine shapes.
Shallow Water Training Ranges (SWTRs)	The SWTR is a range that currently supports anti-submarine warfare (ASW), mine warfare, and surface warfare (SUW) training. The Tanner Bank SWTR SCI SWTR are planned areas within the current SWTR and nearshore SCI where future underwater hydrophone instrumentation will be installed to support the evaluation of aircraft, ship, and submarine performance during ASW training.
Shore Bombardment Area (SHOBA) Impact Areas	SHOBA is the only eastern Pacific Fleet range that supports naval surface fire support training using on-the-ground spotters and surveyed targets. The southern one-third of SCI contains Impact Areas I and II, which comprise the onshore portion of SHOBA. (The offshore component provides designated locations [fire support areas] for firing ships to maneuver.) The main training activities that occur in SHOBA are naval gun firing, artillery, air-to-ground strikes (bombs, missiles, rockets, and gunnery), and air-to-surface maritime strikes (missiles, rockets, and gunnery). A variety of munitions, both live and inert, are expended in SHOBA. Naval special warfare operations also occur in this area.
Southern California Anti-Submarine Warfare Range (SOAR)	SOAR is located offshore to the west of SCI. The underwater tracking range covers over 670 NM^2, and consists of seven subareas. The range has the capability of providing three-dimensional underwater tracking of submarines, practice weapons, and targets with a set of 84 acoustic sensors (hydrophones) located on the seafloor. Communication with submarines is possible through use of an underwater telephone capability. SOAR supports various ASW and SUW training scenarios that involve air, surface, and subsurface units.
Tanner/Cortes Training Minefield	Located in the Tanner and Cortes Banks areas, the Tanner/Cortes Training Minefield is utilized for shallow water mine detection training and testing.
Training Areas and Ranges (TARs)	TARs are littoral operating areas that support demolition, over-the-beach, and tactical ingress and egress training for NSW and amphibious units. TAR-2 and TAR-3 provide underwater demolition areas where explosives up to 500 lb. NEW may be used.
Warning Area (W-291)	W-291 encompasses 113,000 square nautical miles (NM^2) located off of the Southern California coastline, extending from the ocean surface to 80,000 feet above mean sea level. W-291 supports aviation training and Research, Development, Test and Evaluation conducted by all aircraft in the Navy and Marine Corps inventories. Ordnance use is permitted.

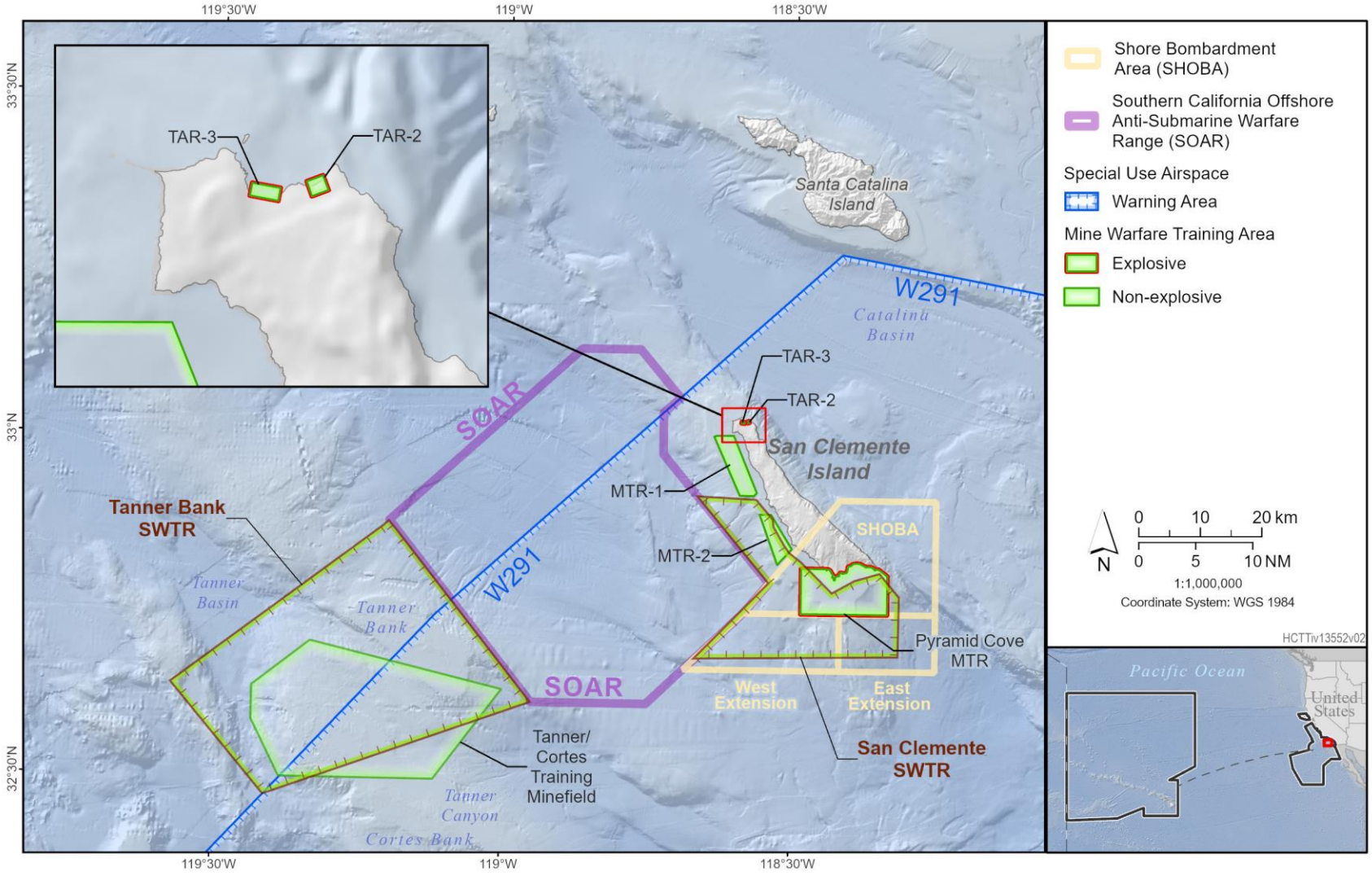
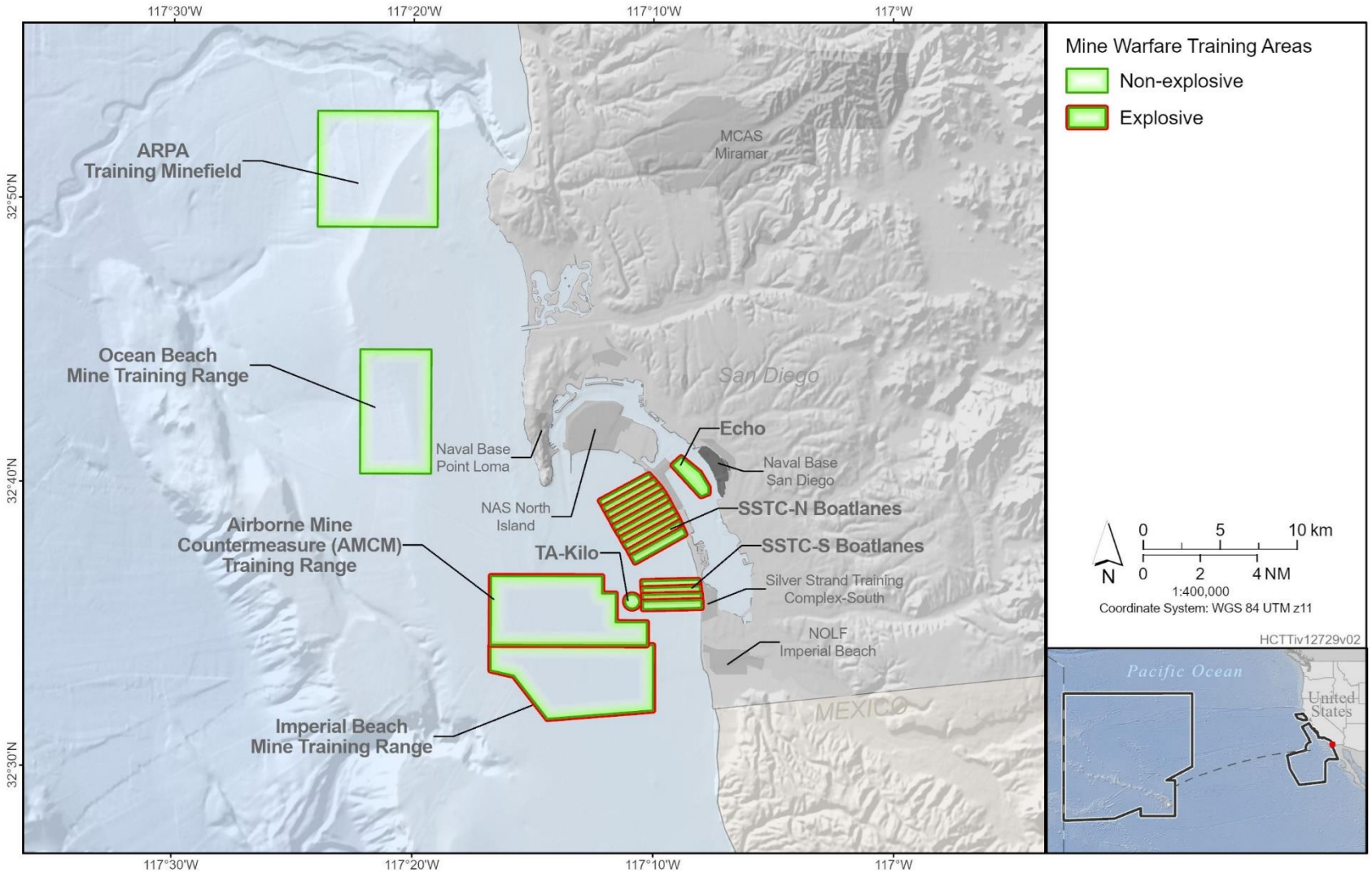


Figure Updated 10/27/2025

Figure H-37: San Clemente Island Offshore Training and Testing Areas

Table H-6: Silver Strand Training Complex Area Descriptions

Area Name	Area Description
Anchorages	Anchorages are numbered 101 through 178 and are 654 yards in diameter. They are grouped together in an area located primarily due west of Silver Strand Training Complex-North, east of Zuniga Jetty and the restricted areas on approach to the San Diego Bay entrance.
Bayside Training Areas	Bayside training beaches consist of Alpha, Bravo, and Charlie to the south, Delta, Echo (I-III), Foxtrot, Golf, and Hotel to the north. This area also includes the piers and Lilly Ann Drop Zone. Underwater explosives up to 0.5 pound net explosive weight.
Lilly Ann Drop Zone	Within San Diego Bay, this area is used for a variety of Navy training, including insertion/extraction via parachute or helicopter.
Oceanside Boat Lanes	The 14 ocean training lanes are each 500 yards wide stretching 4,000 yards seaward and forming a 5,000-yard-long contiguous training area with the northern boat lanes and a 2,000-yard-long contiguous area with the southern boat lanes.
Training Area (TA) Kilo	TA Kilo is an exclusive use area for underwater detonation training. Inert bottom-laid, moored, or floating mine shapes can be used in this area.



Notes: TA = Training Area, NOLF = Naval Outlying Landing Field, NAS = Naval Air Station

Figure H-38: Nearshore In-Water Training Areas

H.2.2.3 Point Mugu Sea Range

PMSR is the Department of Defense's largest and most extensively instrumented over-water test range (Figure H-39). PMSR is located along the Pacific Coast of Central and Southern California and includes 27,000 NM^2 of air and sea space. The 27,000 NM^2 of PMSR-controlled airspace consists of 3 Restricted Areas and 11 Warning Areas. The Navy has been conducting testing and training activities on the PMSR since it was established in 1946. Testing activities are deemed necessary to accomplish Naval Air Systems Command's mission of providing for the safe and secure collection of decision-quality data; and developing, operating, managing, and sustaining the interoperability of the Major Range Test Facility Base at the PMSR into the foreseeable future.

During certain types of testing and under control of PMSR, the FAA will temporarily extend a restricted area of airspace westward beyond the defined PMSR boundaries until testing is complete. Due to the range and speed of weapons and missiles, this larger area is required to ensure a safety area in which debris or expended materials could impact outside of the PMSR with minimal risk of damage or injury to humans. PMSR supports training, testing, and evaluation of a wide variety of weapons, ships, aircraft, and specialized systems, as well as Department of Defense, Homeland Defense, foreign military sales, and commercial/private sector programs. The test range also includes portions of Naval Base Ventura County (NBVC) Point Mugu, NBVC Port Hueneme, and SNI. National Environmental Policy Act coverage of these land areas is included in the 2022 PMSR Final EIS/OEIS. In addition, sea space in the southwestern portion of PMSR has been designated to facilitate testing activities by ONR. Testing activities conducted by ONR are described in Appendix A (Activity Descriptions).

H.2.2.3.1 Naval Base Ventura County Port Hueneme

NBVC Port Hueneme is located 60 miles northwest of Los Angeles and 4 miles south of the city of Oxnard. NBVC Port Hueneme provides port and docking facilities for PMSR support ships, target surface craft, the Navy's Self Defense Test Ship, Fleet units, Naval Facilities Engineering & Expeditionary Warfare Center test vessels, and Naval Sea Systems Command unmanned surface and underwater vehicles using PMSR for testing and combat system qualification trials. NBVC Port Hueneme is also home to Naval Construction Group 1, the Seabees, who conduct important pre-deployment training in waterfront and in-water construction methods. The Study Area for this EIS/OEIS includes the port where support vessels and targets are located and transit to and from PMSR. Figure H-40 shows where within Port Hueneme Harbor the Navy would conduct pile driving activities as part of the Port Damage Repair activity.

H.2.2.3.2 San Nicolas Island

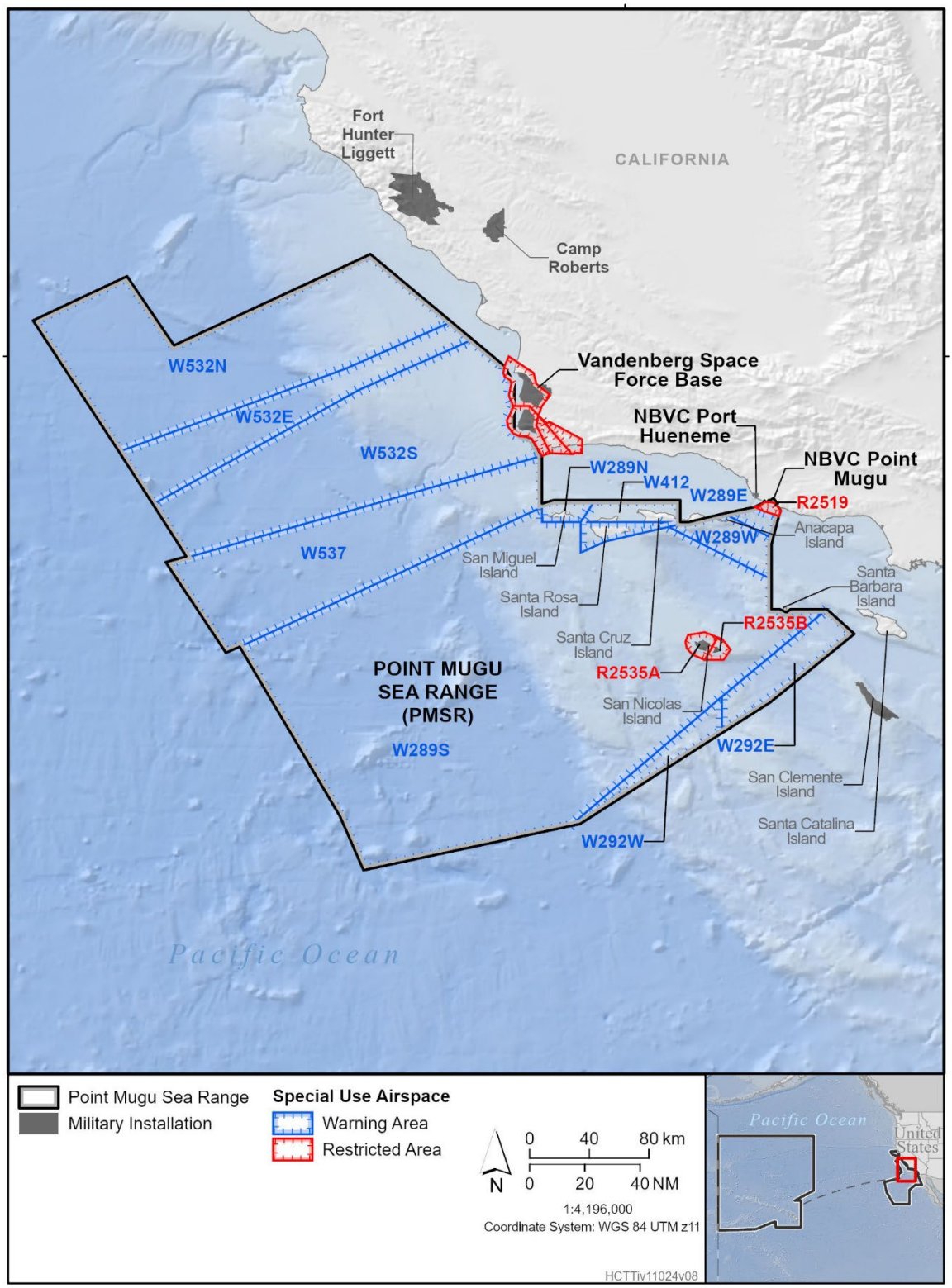
SNI is Navy owned and located approximately 62 miles southwest of Point Mugu, California (Figure H-39). The island covers a total of 13,370 acres and is approximately 9 miles long and 3.6 miles wide. Restricted airspace and corresponding surface danger zones extend out to 3 NM offshore of SNI and preclude public and commercial aircraft and vessel entry into this area when active.

Due to its remote location, SNI can be used to simulate shipboard launches of missiles and serve as a target for a spectrum of inert weapons. The island is extensively instrumented with metric tracking radar, electro-optical devices, telemetry, and communications equipment necessary to support long-range and over-the-horizon weapons and combat systems testing. SNI provides test facilities that include buildings, launch areas, and the Land Impact Site, which is the only target area on the island.

The island also includes an airfield that supports day-to-day activities, as well as a pier structure for logistics barge landings. Activities occurring on land, including at the airfield and the pier (barge landings) are not part of the Proposed Action and are not analyzed in this EIS/OEIS. However, the effects

of missiles, targets, or artillery projectiles fired from SNI in support of training and testing activities are analyzed in this EIS/OEIS due to the potential impact on pinnipeds hauled out on the coastline of SNI, in support of the Navy's request for an incidental take authorization pursuant to the Marine Mammal Protection Act for SNI launch activities. All other training and testing activities occurring from SNI are analyzed in the 2022 PMSR EIS/OEIS.

For additional description of the PMSR, see the 2022 PMSR EIS/OEIS.



Notes: NM = nautical miles, NBVC = Naval Base Ventura County

Figure H-39: The Point Mugu Sea Range



Figure H-40: Naval Base Ventura County Port Hueneme Harbor

H.2.2.4 The Northern California Range Complex

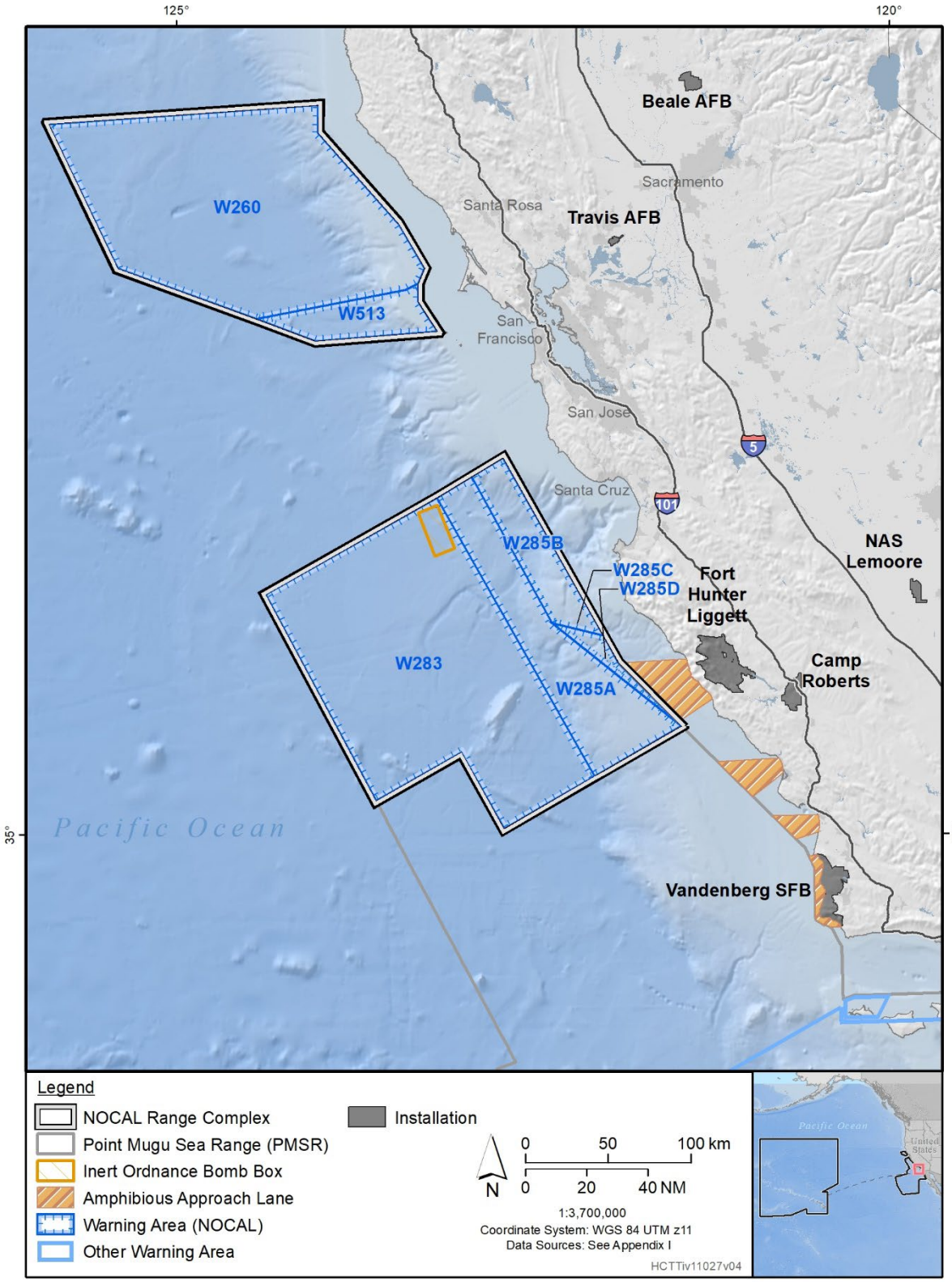
The NOCAL Range Complex consists of two separate areas located offshore of central and northern California, one northwest of San Francisco and the other southwest of Monterey Bay (Figure H-41). Each area includes special use airspace and the underlying sea space. The southern area includes approximately 10,000 NM^2 of airspace within Warning Area 283 (W283) and W285A/B/C/D. The northern area includes approximately 6,000 NM^2 of airspace within W260 and W513. Both components of the NOCAL Range Complex are located at least 12 NM from shore and extend from the ocean surface to at least 45,000 ft. altitude. W260, W283, and W513 have a ceiling of 60,000 ft.

These areas' proximity to Naval Air Station Lemoore, where the Navy's Pacific Fleet Strike Fighter squadrons are based, is particularly important for the support of critical Strike Fighter Wing training. These areas also provide air and sea space for Carrier Strike Groups[3] and Amphibious Ready Groups[4] to conduct training, certifications, and testing. As evolving naval tactics and new weapon systems strain the capacity of the SOCAL Range Complex, both PMSR and the NOCAL Range Complex give air and surface platforms the freedom to maneuver and position themselves optimally for large-scale at-sea training scenarios.

Amphibious Approach Lanes (Figure H-42) extend the Study Area from PMSR and the NOCAL Range Complex to the shore to facilitate amphibious training at these locations. Amphibious approach lanes are used by amphibious assault landing craft to approach and land on a beach to move personnel and equipment from ship to shore. In this EIS/OEIS, only the at-sea components of amphibious warfare activities utilizing the amphibious approach lanes (e.g., amphibious assault) are analyzed.

[3] A Carrier Strike Group is an operational composition of combat ships and aircraft, centered around an aircraft carrier.

[4] An Amphibious Ready Group is an operational composition of combat ships, aircraft, and Marines, centered around several amphibious ships.



Notes: NOCAL = Northern California, SFB = Space Force Base, AFB = Air Force Base, NAS = Naval Air Station

Figure H-41: Northern California Range Complex

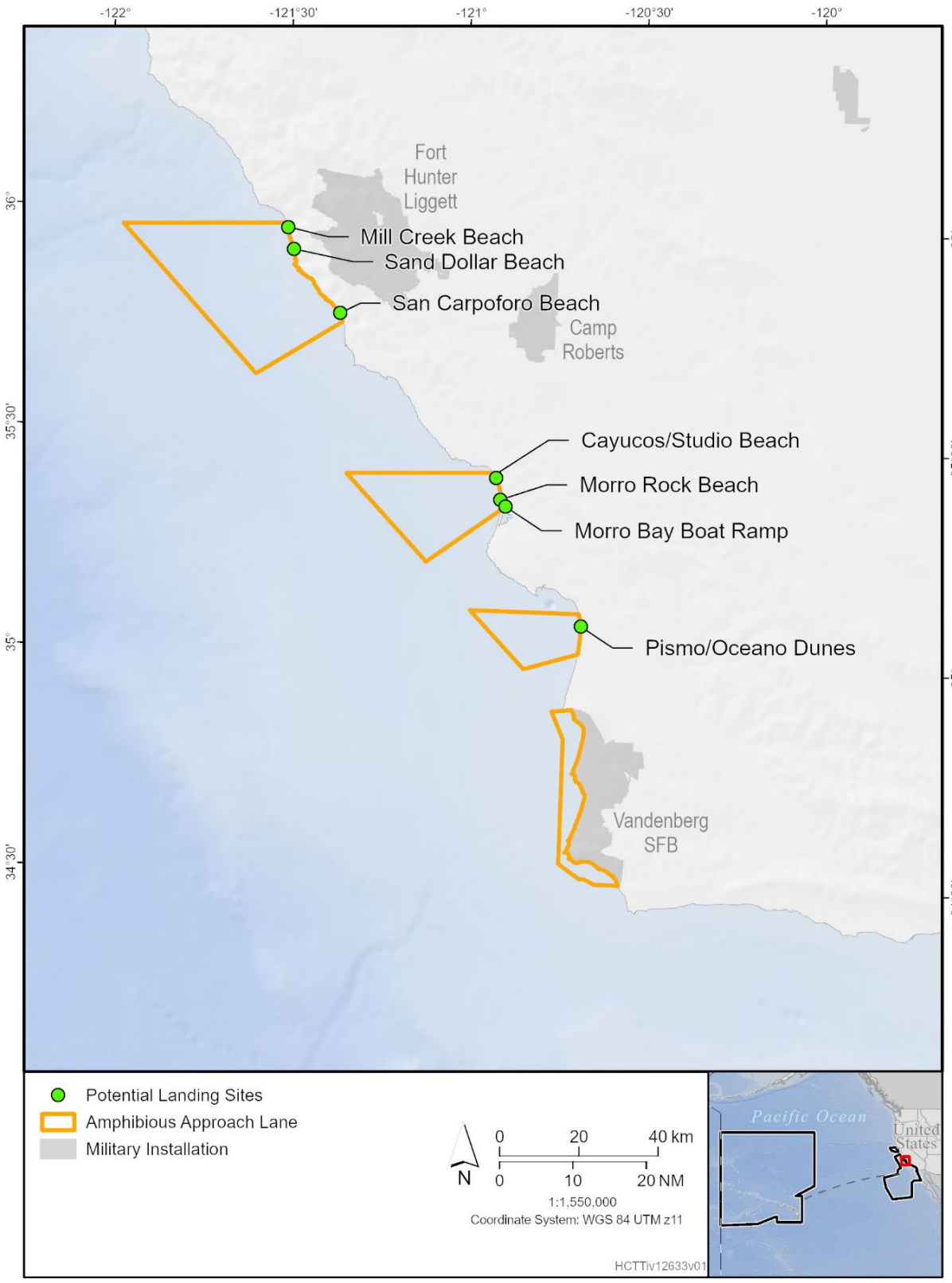


Figure H-42: Amphibious Approach Lanes

Appendix I Military Expended Materials, Direct Strike, and Ship Strike Effects Analysis

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Overseas Environmental Impact Statement
Hawaii-California Training and Testing
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APPENDIX I Military Expended Materials, Direct Strike, and Ship Strike Effects Analysis

I.1 Estimating the Effect of Military Expended Materials and Underwater Explosions on Abiotic Substrates as a Habitat for Biological Resources

This section discusses the methods and results for quantifying two scenarios under Alternative 1 and Alternative 2 of the Proposed Action: (1) the highly improbable worst-case scenario of all military expended materials or underwater explosions occurring on one particular substrate type; and (2) the unlikely, but slightly more realistic, scenario of uniform or proportional effect distribution within a particular area. Training and testing typically occurs in areas that are not called out or linked to specific activities for various reasons (e.g., flexibility and national security). Because training and testing activities would not be conducted under the No Action Alternative, it will not be discussed in this appendix.

This section describes the calculation of the disturbance footprint (i.e., military expended material footprint or explosive crater footprint) of an instantaneous effect of military expended materials or explosions on the substrate. The actual instantaneous effect on the bottom will depend on the number and location of military expended materials expended and not recovered, which is likely much lower and more concentrated than either scenario being analyzed. Longer-term effects on the bottom are far more difficult to quantify—refer to Section 3.2 (Sediments and Water Quality) and Section 3.5 (Habitats) of Chapter 3 (Affected Environment and Environmental Consequences) for qualitative discussion.

The analysis requires two data elements: (1) a tabular summary of the military expended material or crater (underwater explosions) footprints expected in training and testing areas; and (2) a tabular summary of analysis dimensions, which includes abiotic substrate areas.

- The data for (1) comes from the Hawaii-California Training and Testing (HCTT) Action Proponents and represents the most locational flexibility with regard to expenditure of military expended materials and underwater explosions. The data for the number of military expended materials and in-water explosions are then multiplied by an estimate of the footprint size. The footprints listed for various expended materials in the 2018 HSTT EIS/OEIS were rough estimates compared to the more accurate estimates used for the current analysis.
    - The footprint sizes for military expended material are estimated to be twice the size of its material footprint, to account for some disturbed sediment around the object. Items with a casing have two separate entries in the data for their impact footprints. One incorporates that size of the unrecovered casing itself and the other is for the size of the projectile. A percentage of the casings are assumed to be recovered and are not included in the footprints, which is an improvement over the analysis in the 2018 Final EIS/OEIS.
    - The footprint sizes for in-water explosive effects on the bottom are based on equations and empirical data reported in Gorodilov and Sukhotin (1996) and O'Keeffe and Young (1984). The crater footprint was then doubled to account for an area of ejected substrate.

- The data for analysis dimensions (data element 2) comes from the Benthic Habitat Database Technical Report, in addition to spatial data depicting training and testing areas.

The combined analysis dimensions data was used to create a table of substrate category acreage by training and testing areas, and large marine ecosystems. Within the HCTT Study Area there are acreages of substrate that are included under Protective Measures Assessment Protocol (PMAP) categories from the Phase III Hawaii-Southern California Training and Testing EIS/OEIS. These PMAP categories indicate the amount of mapped substrate that may be protected by Navy mitigation measures. However, the PMAP areas were not excluded from the quantitative effects analysis due to how PMAP is implemented. For more information on the substrates protected under PMAP see Chapter 5 (Mitigation).

The percentage of affected substrate was calculated by totaling the effect footprint of individual activities divided by the total area of a given substrate in the training or testing area for which the effects could occur. The results are provided in Table I-2 through Table I-5.

Assumptions used in the Scenario 1 analysis included the following:

- Areas of unknown substrate type were not included in the analysis.
- The analysis focused on substrates that are likely to have habitat for sedentary benthic organisms; therefore, areas that are not likely to have substrate inhabited by these organisms (i.e., the Pacific Basin and Abyssal Zone open ocean areas) were excluded from the analysis.
- Artificial substrate was removed from the analysis because it was inconsistently mapped or mapped with a degree of uncertainty considered too high for quantitative analysis.

I.2 Effects on Seafloor Habitats – Military Readiness Activities

Table I-1 shows the Study Area bottom types. Using the methodology and assumptions described under Section I.1 (Estimating the Effect of Military Expended Materials and Underwater Explosions on Abiotic Substrates as a Habitat for Biological Resources), Table I-2 through Table I-5 show single-year effects on applicable habitat types, from both explosive charges and military expended materials.

Table I-1: Area and Percent Coverage of Abiotic Substrate Types in the Study Area

Study Area	Habitat						Total Area (km^2)
	Hard		Mixed		Soft		
	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	
Hawaii	421,755	5.37	132,133	1.68	7,300,565	92.95	7,854,453
California	1,960	0.22	98,532	11.06	790,400	88.72	890,893
Total	423,715	4.85	230,665	2.64	8,090,965	92.52	8,745,346

Table I-2: Effect from MEM on or Near the Bottom for Military Readiness Activities under Alternative 1 in a Single Year

Training Areas	Impact Footprint (Acres)			Effect by Bottom Type (Acre)		
	Training	Testing	Combined	Hard	Mixed	Soft
Hawaii Study Area	1.794	1.136	2.930	0.263	0.303	2.364
California Study Area	5.282	2.870	8.152	0.018	0.892	7.241
Grand Total	**7.076**	**4.006**	**11.082**	**0.280**	**1.196**	**9.605**

Table I-3: Effect from MEM on or Near the Bottom for Military Readiness Activities under Alternative 2 in a Single Year

Training Areas	Impact Footprint (Acres)			Effect by Bottom Type (Acre)		
	Training	Testing	Combined	Hard	Mixed	Soft
Hawaii Study Area	2.121	1.686	3.808	0.341	0.394	3.072
California Study Area	6.219	4.010	10.229	0.023	1.120	9.086
Grand Total	**8.340**	**5.696**	**14.036**	**0.364**	**1.514**	**12.158**

Table I-4: Effect from Explosives on or Near the Bottom for Military Readiness Activities under Alternative 1 in a Single Year

Training Areas	Crater Footprint (Acres)			Effect by Bottom Type (Acre)		
	Training	Testing	Combined	Hard	Mixed	Soft
Hawaii Study Area	6.162	1.462	7.623	0.683	0.789	6.151
California Study Area	23.019	8.330	31.349	2.809	3.245	25.293
Grand Total	**29.181**	**9.792**	**38.973**	**3.492**	**4.034**	**31.443**

Table I-5: Effect from Explosives on or Near the Bottom for Military Readiness Activities under Alternative 2 in a Single Year

Training Areas	Crater Footprint (Acres)			Effect by Bottom Type (Acre)		
	Training	Testing	Combined	Hard	Mixed	Soft
Hawaii Study Area	6.439	2.121	8.560	0.708	0.818	6.374
California Study Area	26.160	17.832	43.992	3.942	4.553	35.492
Grand Total	**32.599**	**19.953**	52.551	4.650	5.371	41.866

I.3 Statistical and Probability Analysis for Estimating Direct Strike Effect and Number of Potential Exposures from Military Expended Materials

This section discusses the methods and results for calculating the probability of a direct strike of a marine animal from any military items resulting from the proposed training and testing activities falling toward (or directed at) the sea surface. For the purposes of this section, military items include non-explosive practice munitions, sonobuoys, acoustic countermeasures, targets, and high-energy lasers. Only marine mammals and sea turtles will be analyzed using these methods because animal densities are necessary to complete the calculations and density estimates are currently only available for marine mammals and sea turtles within the Study Area. The analysis conducted here does not account for explosive munitions because impacts from explosives are analyzed within the Navy Acoustic Effects Model as described in the report, Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing (U.S. Department of the Navy, 2024). Table I-6 provides a list of symbols used in the equations located in the preceding sections.

Table I-6: A List of Symbols and Their Brief Descriptions as They Are Used in the Analysis

Symbol	Explanation
A_S	Area of an individual marine animal
L_S	Length of an individual marine animal
W_S	Width of an individual marine animal
N_S	Number of individual animals within a single marine species
D_S	Density of animals within a single marine species
A_{TotS}	The total footprint area of a single marine species
A_{RC}	The area of a single testing/training range
L_{mun}	The length of an individual piece of military expended material
W_{mun}	The width of an individual piece of military expended material
A_{mun}	The area of an individual piece of military expended material
N_{mun}	The total number of military expended materials used of a single type (e.g., non-explosive bomb)
A_I	The total area of military expended materials used of a single type (e.g., non-explosive bomb)
A_{TotI}	The area of impact for all types of military expended materials; the impact footprint
A_{BZ}	The area of the buffer zone around the impact footprint
A_{Final}	The total area of concern, including the buffer zone (A_{BZ}), the impact footprint (A_{TotI}), and the total animal footprint of a single marine species (A_{TotS})
R_{TotS}	The total footprint radius of a single marine species
R_{TotI}	The total footprint radius of the impact footprint for all types of military expended materials
R_{BZ}	The buffer zone radius of the impact footprint for all types of military expended materials
P	The probability of impacting a marine animal through a military expended material direct exposure impact
T	Total number of possible surface animal exposures associated with a direct impact from military expended materials

I.3.1 Direct Impact Analysis

A probability was calculated to estimate the impact probability (P) and number of exposures (T) associated with direct impact of military items on marine animals and sea turtles on the sea surface within the specified training or testing area (A_{RC}) in which the activities are occurring. The statistical probability analysis is based on probability theory with "footprint" areas for marine animals and total impact inscribed inside the training or testing area. The analysis is over-predictive and conservative, in that it assumes: (1) that all animals would be at or near the surface 100 percent of the time, when in fact, marine mammals spend the majority of their time underwater (e.g., Fonseca et al., 2022; Hochscheid, 2014; Irvine et al., 2017; Lagerquist et al., 2000; Mate et al., 1995), and (2) that the animals are stationary, which does not account for any movement or any potential avoidance of the training or testing activity area. There is some research that suggests marine mammals will avoid areas where there is sonar activity but not areas where there is just vessel traffic noise; so, avoidance behavior in marine mammals is situationally dependent (for review see (Ellison et al., 2012)). For sea turtles, research has demonstrated changes in behavior of sea turtles in response to anthropogenic sounds (O'Hara & Wilcox, 1990; Samuel et al., 2005), but more research is needed to determine if they portray avoidance behavior to any form of anthropogenic activity.

There are three types of areas incorporated into the analyses: species area (A_S), total impact footprint area (A_{TotI}), and the buffer zone of the impact area (A_{BZ}). For each calculation, a basic area is assessed

using either the area calculation for a rectangle (A = length * width) or a circle ($A = \pi R^2$, where R is the radius of a circle). These area calculations were used in four different scenarios that make assumptions about the type of interaction between the marine animal and the military expended materials. For the initial three scenarios, all areas are calculated using the rectangular method. For the fourth scenario, all areas are calculated using the circular method.

- Scenario 1: Purely static, rectangular scenario. Impact is assumed to be static (i.e., direct impact effects only; non-dynamic; no explosions or scattering of military items after the initial impact) with a military expended material directly hitting a marine animal. This scenario assumes the marine animal is fully inside the impact area when contact with the military expended material is made.
- Scenario 2: Dynamic scenario with end-on collision. It is assumed that the military expended material is moving through the water, in the same direction as the length of the impact zone, for a distance of six times the initial length of the impact area. The concept here is that the military expended material has forward momentum along the length of the impact area and can make contact with the marine animal at any point inside of this new impact footprint area.
- Scenario 3: Dynamic scenario with broadside collision. It is assumed that the military expended material is moving through the water, in the same direction as the width of the impact zone, for a distance of six times the initial width of the impact area. The concept here is that the military expended material has forward momentum along the width of the impact area and can make contact with the marine animal at any point inside of this new impact footprint area.
- Scenario 4: Purely static, radial scenario, in which the rectangular animal, buffer zone, and impact footprints are replaced with circular footprints. Basically, the assumption is that the animal and the military expended materials are moving in circular patterns, rather than straight paths. This scenario assumes the marine animal is fully inside the impact area when contact with the military expended material is made.

Static impacts (Scenarios 1 and 4) assume no additional aerial coverage effects of scattered military items beyond the initial impact. For dynamic impacts (Scenarios 2 and 3), the distance of any scattered military items must be considered by increasing the length (Scenario 2) or width (Scenario 3), depending on orientation (broadside versus end-on collision), of the impact footprint to account for the forward horizontal momentum of the falling object. Forward momentum typically accounts for six times the impact area's length or width. Significantly different values may result from the static and dynamic orientation scenarios. Both types of collision conditions can be calculated each with 50 percent likelihood (i.e., equal weighting between Scenarios 2 and 3, to average these potentially different values).

The method of area (A_S, A_{TotI}, and A_{BZ}) calculation will vary slightly with each scenario. First, the basic concepts behind the area calculations are addressed below.

- The individual animal area (A_S) was calculated by multiplying the length and the width of the animal ($A_S = L_S * W_S$), where width was 20 percent of the length for marine mammals and 84% of the length for sea turtles. Then, the species density and the range complex (A_{RC}) size were incorporated to produce the species total area (A_{TotS}). A_S was multiplied by the number of animals (N_S) in the specified training or testing area, where N_S was the product of the highest average month animal density (D_S) and the area of the range complex ($A_{TotS} = A_S * N_S = A_S * D_S * A_{RC}$). As a conservative scenario, the total animal footprint area was calculated for the species with the highest average monthly density in the training or testing area with the highest use of

military items within the entire Study Area. For the remainder of the calculations A_{TotS} was used to represent the presence of the species within the area.

- To assess the impact footprint area (A_I) for a single type of munition used in the range complex, the area of the munition (A_{mun}) was calculated by multiplying the length and width of the munition ($A_{mun} = L_{mun} * W_{mun}$). Then, A_{mun} was multiplied by the total number of that munition type used in a year (N_{mun}). Thus, $A_I = N_{mun} * A_{mun}$ is the impact footprint for a single type of munition in a single range complex over a year.
- The A_I for each munition type used in the range complex was then summed across all munition types to get a total impact footprint (A_{TotI}) for a year within a single range complex. As a conservative scenario, the total impact footprint area was calculated for the training or testing area with the highest use of military items within the entire Study Area. This total impact footprint area was then converted back into the length-width assessment, with the ratio of the impact area mirroring the animal $\frac{W_S}{L_S} = \frac{W_{TotI}}{L_{TotI}}$.
- In addition to the impact footprint and the species footprint, a buffer zone around the impact area footprint was included in the analysis. The purpose of this buffer zone was to be overly protective of the species to ensure that any species just outside of the impact area were also included in the analysis. The buffer zone was simply calculated by taking half of the area of the total impact footprint ($A_{BZ} = A_{TotI} * 0.5$) for the rectangular scenarios. For the circular scenarios, an additional buffer zone radius (R_{BZ}) was calculated.

These calculations were then fed into the final calculation area (A_{Final}) for the three rectangular scenarios (Scenarios 1-3). So, $A_{Final1} = A_{BZ1} + A_{TotI1} + A_{TotS}$, where 1 designates Scenario 1. The same concept was applied for Scenarios 2 and 3, except the L_{TotI} for Scenario 2 was multiplied by 6 and the W_{TotI} for Scenario 3 was multiplied by 6, which influence both A_{TotI} and A_{BZ} for each of the scenarios. In each case, the buffer zone could also be calculated by simple subtraction $A_{BZ} = A_{Final} - A_{TotI} - A_S$, for each respective scenario. For Scenario 4, the radial scenario, the area calculation was based on a circle. $A_{Final4} = \pi * (R_{TotS} + R_{TotI} + R_{BZ})^2$. To calculate the buffer zone from the final area, the following equation could also be used: $A_{BZ4} = \sqrt{(\frac{A_{Final4}}{\pi})} - R_{TotI} - R_{TotS}$.

Impact probability (P) is the probability of impacting one animal at its species peak density, with the given number, type, and dimensions of all military items used in training or testing activities occurring in the area per year. Therefore, P is the ratio of the final area for each scenario, which includes the species area, the impact footprint, and the buffer zone of the impact footprint, and the range complex area ($P = \frac{A_{Final}}{A_{RC}}$, where A_{Final} is based on the value calculated in each scenario). The total number of possible exposures (T) within a given year is a product of the species density, the area of the range complex, and the impact probability ($T = (D_S * A_{RC})*P$). Using this procedure, P and T were calculated for each of the four scenarios, for the Endangered Species Act (ESA)-listed marine mammals and the non-ESA marine mammal and ESA-listed sea turtle species with the highest average month density (used as the annual density value) and for each military item type. The scenario-specific P and T values were averaged over the four scenarios (using equal weighting) to obtain a single scenario, averaged-annual estimate of P and T.

The analysis is expected to provide an overestimation of the probability of a strike for the following reasons: (1) it calculates the probability of a single military item (of all the items expended over the course of the year) hitting a single animal at its species' highest seasonal density; (2) it does not take

into account the possibility that an animal may avoid military activities; (3) it does not take into account the possibility that an animal may not be at the water surface; (4) it does not take into account that most projectiles fired during training and testing activities are fired at targets, and so only a very small portion of those projectiles that miss the target would hit the water with their maximum velocity and force; and (5) it does not quantitatively take into account the Navy avoiding animals that are sighted through the implementation of mitigation measures.

I.3.2 Parameters for Analysis

Impact probabilities (P) and number of exposures (T) were estimated by the analysis for the following parameters:

- Two action alternatives: Alternative 1 and Alternative 2. Animal densities, animal dimensions, and military item dimensions are the same for the two action alternatives.
- Two training or testing areas: Hawaii Study Area and California Study Area. Areas are approximately 806,027 square kilometers and 912,350 square kilometers, respectively.
- The following types of non-explosive munitions or other items:
    - **Small-caliber projectiles**: up to and including 0.50 caliber rounds
    - **Medium-caliber projectiles:** larger than 0.50 caliber rounds but smaller than 57 millimeters (mm) projectiles
    - **Large-caliber projectiles:** includes projectiles greater than or equal to a 57 mm projectile
    - **Missiles:** includes rockets and jet-propelled munitions
    - **Bombs:** Non-explosive practice bombs and mine shapes, ranging from 10 to 2,000 pounds
    - **Torpedoes:** includes all lightweight torpedoes
    - **Sonobuoys:** includes all sonobuoys
    - **Targets:** includes expended airborne and surface, as well as mine shapes
    - **Lightweight torpedo accessories:** includes all accessories that are dropped along with the torpedo (e.g., nose cap, air stabilizer)
    - **Anchors:** includes blocks used to anchor mine shapes to the seafloor
    - **Acoustic countermeasures:** includes aircraft deployed acoustic countermeasures
    - **High-energy lasers**: includes high-energy laser weapons that are directed at a surface target
    - **Expended bathythermographs**: small sensor deployed from ships
- Animal species of interest: The species of ESA-listed marine mammals expected in the HCTT Study Area and the non-ESA listed marine mammal with the highest average month density in the Hawaii Study Area and the California Study Area.
- All sea turtles are ESA-listed and are included if their presence in each area is expected.

I.3.3 Output Data

Estimates of impact probability (P) and number of exposures (T) for a given species of interest were made for the specified training or testing area with the highest annual number of military items used for each of the two action alternatives. The calculations derived P and T from the highest annual number of military items used in the Study Area for the given alternative. Differences in P and T between the

alternatives arise from different numbers of events (and therefore military items) for the two alternatives.

Results for marine mammals and sea turtles are presented in Table I-7 through Table I-10.

Table I-7: Estimated Representative Marine Mammal Exposures from Direct Strike of a High-Energy Laser by Area and Alternative in a Single Year

Hawaii Study Area				
Species	**Training**		**Testing**	
	Alternative 1	**Alternative 2**	**Alternative 1**	**Alternative 2**
Blue Whale	0.0000006	0.0000006	0.0000006	0.0000006
Fin Whale	0.0000026	0.0000026	0.0000027	0.0000027
Humpback Whale	0.0001250	0.0001250	0.0001273	0.0001277
Sperm Whale	0.0000683	0.0000683	0.0000699	0.0000702
Sei Whale	0.0000008	0.0000008	0.0000009	0.0000009
Killer Whale	0.0000017	0.0000017	0.0000019	0.0000019
False Killer Whale (MHI Insular DPS)	0.0000020	0.0000020	0.0000023	0.0000024
Hawaiian Monk Seal	0.0000460	0.0000460	0.0000507	0.0000516
Rough-toothed Dolphin	0.0022764	0.0022764	0.0040113	0.0047075
California Study Area				
Species	**Training**		**Testing**	
	Alternative 1	**Alternative 2**	**Alternative 1**	**Alternative 2**
Blue Whale	0.0021360	0.0021360	0.0026125	0.0027501
Fin Whale	0.0770323	0.0021360	0.0807100	0.0815756
Gray Whale	0.0398065	0.0021360	0.0452267	0.0466958
Humpback Whale	0.0016596	0.0021360	0.0022606	0.0024442
Sperm Whale	0.0001209	0.0021360	0.0002654	0.0003145
Sei Whale	0.0000006	0.0021360	0.0000078	0.0000106
Killer Whale	0.0000001	0.0021360	0.0000049	0.0000067
Guadalupe Fur Seal	0.0007741	0.0021360	0.0031727	0.0040357
Short-beaked Common Dolphin	1.4873838	1.4873838	1.5124785	1.5131423

Table I-8: Estimated Representative Sea Turtle Exposures from Direct Strike of a High-Energy Laser by Area and Alternative in a Single Year

Hawaii Study Area				
Species	Training		Testing	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Green Turtle	0.0000001	0.0000001	0.0000002	0.0000002
Hawksbill Turtle	0.0000000	0.0000000	0.0000000	0.0000000
Leatherback Turtle	0.0000032	0.0000032	0.0000038	0.0000039
Loggerhead Turtle	0.0000029	0.0000029	0.0000037	0.0000039
Olive Ridley Turtle	0.0000014	0.0000014	0.0000021	0.0000023
California Study Area				
Species	Training		Testing	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Green Turtle	0.0057387	0.0057387	0.0061786	0.0061921
Leatherback Turtle	0.0000019	0.0000019	0.0000042	0.0000043
Loggerhead Turtle	0.0001591	0.0001591	0.0002079	0.0002096

Table I-9: Estimated Representative Marine Mammal Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year

Hawaii Study Area				
Species	Training		Testing	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Blue Whale	0.0000040	0.0000045	0.0000024	0.0000032
Fin Whale	0.0000077	0.0000085	0.0000055	0.0000066
Humpback Whale	0.0002346	0.0002492	0.0001881	0.0002124
Sperm Whale	0.0001560	0.0001680	0.0001180	0.0001378
Sei Whale	0.0000076	0.0000086	0.0000044	0.0000060
Killer Whale	0.0000196	0.0000223	0.0000113	0.0000156
False Killer Whale (MHI Insular DPS)	0.0000330	0.0000377	0.0000185	0.0000260
Hawaiian Monk Seal	0.0004796	0.0005445	0.0002783	0.0003825
Rough-toothed Dolphin	0.0053458	0.0057675	0.0040113	0.0047075
California Study Area				
Species	Training		Testing	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Blue Whale	0.0031050	0.0032710	0.0026125	0.0027501
Fin Whale	0.0836673	0.0845990	0.0807100	0.0815756
Gray Whale	0.0504150	0.0521321	0.0452267	0.0466958
Humpback Whale	0.0029248	0.0031521	0.0022606	0.0024442
Sperm Whale	0.0004465	0.0005101	0.0002654	0.0003145
Sei Whale	0.0000180	0.0000216	0.0000078	0.0000106
Killer Whale	0.0000118	0.0000143	0.0000049	0.0000067
Guadalupe Fur Seal	0.0063822	0.0075207	0.0031727	0.0040357
Short-beaked Common Dolphin	1.9583771	2.0361045	1.7250189	1.7907992

Table I-10: Estimated Representative Sea Turtle Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year

Hawaii Study Area				
Species	Training		Testing	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Green Turtle	0.0000139	0.0000161	0.0000073	0.0000107
Hawksbill Turtle	0.0000025	0.0000029	0.0000013	0.0000019
Leatherback Turtle	0.0000652	0.0000746	0.0000360	0.0000511
Loggerhead Turtle	0.0001002	0.0001151	0.0000540	0.0000778
Olive Ridley Turtle	0.0000940	0.0001083	0.0000498	0.0000726
California Study Area				
Species	Training		Testing	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Green Turtle	0.0202469	0.0230685	0.0121948	0.0143809
Leatherback Turtle	0.0001430	0.0001730	0.0000596	0.0000818
Loggerhead Turtle	0.0025325	0.0030239	0.0011550	0.0015238

I.4 Navy and Coast Guard Vessel Strike of Large Whale Species

Vessel strike to marine mammals is not associated with any specific training or testing activity but rather an inadvertent, limited, sporadic, and incidental result of Navy and Coast Guard vessel movement within the Study Area. A detailed analysis of HCTT strike data and probability calculations used to justify the HCTT strike request are presented here. The Navy and Coast Guard do not anticipate vessel strikes to result in a significant population threat to marine mammal populations within the HCTT Study Area. This assessment is based on the probabilities presented in the strike analysis, the cumulative recent history of Navy vessel strikes over 16.6 years from January 2009 through August 2025 (7 strikes), establishment and updates to the Navy's Marine Species Awareness Training requirements across the Navy, and adaptation of additional mitigation measures since 2018. However, the Navy and Coast Guard are electing to request takes from vessel strikes in the HCTT Study Area as a cautionary acknowledgment that some probability of ship strike could occur over a seven-year authorization. Stricken animals are not easily identifiable to the species level; therefore, the Navy or Coast Guard cannot quantifiably predict that any proposed strike takes will be of a particular species. The Navy and Coast Guard therefore seek take authorization for a select combination of the marine mammal stocks in the HCTT study area that may be more susceptible to being struck.

I.4.1 Summary of Navy Ship Strike Request

Based on the probabilities of whale strikes suggested by an analysis of past strike data and anticipated future training and testing at-sea days, the Navy requests authorization for take of no more than seven (7) large whales of any of the following combined stocks, by injury or mortality, resulting from vessel strike incidental to the Navy training and testing activities within any portion of the Study Area over the course of the seven years of the HCTT regulations.

This strike request would include a combination of the following species and stocks, not to exceed seven (7) total strikes over seven years:

- one strike for blue whales (Eastern North Pacific Stock)
- up to five strikes for fin whales (California/Oregon/Washington Stock)

- up to two strikes for gray whales (Eastern North Pacific Stock)
- one strike for humpback whales (Mainland Mexico-California-Oregon-Washington Stock)
- one strike for humpback whales (Central America/Southern Mexico-California-Oregon-Washington Stock)
- one strike for humpback whales (Hawaii Stock)
- one strike for sei whales (Eastern North Pacific Stock)
- one strike for sperm whales (Hawaii stock)

I.4.2 Summary of Coast Guard Ship Strike Request

Based on the probabilities of whale strikes suggested by an analysis of past strike data and anticipated future training and testing at-sea days, the Coast Guard requests authorization for take of no more than two (2) large whales of any of the following combined stocks, by injury or mortality, resulting from vessel strike incidental to the Coast Guard training activities within any portion of the HCTT Study Area over the course of the seven years of the HCTT regulations. This strike request would include a combination of the following species and stocks, not to exceed two (2) total strikes over seven years:

- one strike for blue whales (Eastern North Pacific Stock)
- up to two strikes for fin whales (California/Oregon/Washington Stock)
- up to two strikes for gray whales (Eastern Pacific Stock)
- up to two strikes for humpback whales (Mainland Mexico-California-Oregon-Washington Stock)
- up to two strikes for humpback whales (Central North Pacific Stock)

I.4.3 Probability of Vessel Strike of Large Whale Species

To conduct a statistical analysis of future Navy ship strikes within HCTT, three basic components are required:

1. Number of Navy or Coast Guard ship strikes to large whales for the 16.6-year period prior to the period for which new Marine Mammal Protection Act (MMPA) authorization is being sought (2009–2025).
2. Amount of Navy or Coast Guard at-sea surface vessel days for the 16.6-year period (2009–2025) prior to the period for which new MMPA authorization is being sought.[1]
3. Estimate of future Navy or Coast Guard at-sea surface vessel days for the requested new authorization seven-year period (December 2025–December 2032).

I.4.3.1 HCTT Strikes

There were seven large whale strikes within HCTT by Navy surface ships between January 2009 and August 2025 (Figure I-1), all in Southern California (SOCAL). For the Coast Guard, there was one strike in

[1] To assess the most current vessel traffic information available, the Navy utilized a classified positional database currently known as Authoritative Maritime Services. Roughly 800 million positional vessel data records spanning the years 2016–2023 were extracted and analyzed. The positional data was spatially explicit meaning only records of position and transits within the subareas of HCTT were used; SOCAL Range Complex, Hawaii Range Complex, Point Mugu Sea Range, Northern California Range Complex, and the transit lane between California and Hawaii. Most of the data records obtained are civilian commercial shipping (tanker vessels, cargo vessels, large fishing vessels, etc.). Navy vessel transits typically only account for 5 percent or less of overall total vessel movements within the Study Area. For this ship strike analysis, only Navy and Coast Guard data is presented. Later in this analysis, it is explained how the most recent dataset was used to make assumptions about vessel traffic from 2009 to 2015.

Hawaii over the same period. It should be noted that there were 13 years where no Navy strikes occurred, including a consecutive 11-year period with no strikes (2010–2020, 2022, 2024).

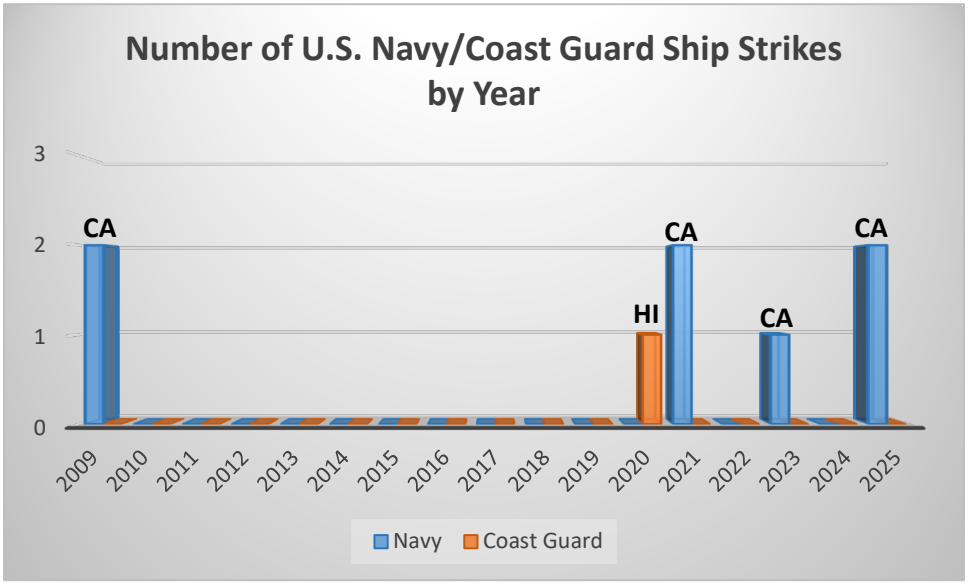


Figure I-1: HCTT Navy and Coast Guard Ship Strikes 2009–2025

I.4.3.2 HCTT Number of At-Sea Days (7 Years from 2017 to 2023)

Background - The entire period of Navy at-sea MMPA authorization for Hawaii and California was considered in the analysis of strike history. The period from 2009 to 2025, therefore, was selected as the most appropriate time frame to calculate potential probability of a large whale ship strike from Navy or Coast Guard vessels in the HCTT Study Area over the term of anticipated new seven-year permit (December 2025–December 2032).

The analysis discussed in the application is specific to Navy larger size class vessels over 127 meters (m) (418 feet [ft.]) that have been involved with HCTT strikes between 2009 and 2025. While required to report any strike incidents, there have been no Navy reports over the analysis period (2009–2025) of vessel strikes to whales in HCTT from smaller Navy vessel and boat classes (e.g., tugs, service craft, landing craft, special operations Rigid Hull Inflatable Boat. Furthermore, no vessel movement tracking data is available for these smaller craft which are not subject to the same systems as larger vessels. In addition, during the Hawaii-Southern California Training and Testing Phase III authorization period from 2018 to date there have been no whale strikes from various size classes of Navy unmanned surface vessels (USV).

Tracking data for Coast Guard vessels is only available for larger ship classes longer than 100 m (328 ft.). The one Coast Guard strike within the Study Area was from a smaller craft between 40 and 100 ft. for which tracking data is not available. For calculation purposes, the larger Navy and Coast Guard vessel tracking data is sufficient for worst case serious injury or mortality probability predictions. Smaller vessel and craft sizes at-sea time is relatively similar in both the prior permit period and forecasted future permit period

Analysis Assumptions- The Navy's analysis based on 2016–2023 data has significantly better fidelity related to vessel at-sea days specifically within the Study Area than previously used analysis. The current information overall is more accurate by area and time. Previous estimates of at-sea vessel days between

2009-2015 included movements throughout the Pacific, not just within the Study Area. Nor did the data provide results proportioned to the various sub-areas or range complexes within HCTT. Therefore, the Navy used the average of the 2016–2023 annual values as a surrogate for annual at-sea days for each year between 2009 and 2015. The annual value for 2023 was used for 2024.

As expected, due to the higher number of homeported ships in San Diego as opposed to Pearl Harbor[2], more Navy ship traffic occurs in the Southern California Range Complex (Figure I-2).

Results- In this analysis, cumulative Navy at-sea days from 2009 to August 2025 was calculated to be 36,306 days for Navy manned vessels greater than 127 m (418 ft. or Littoral Combat Ship [LCS] size and above[3]) and various sizes of USVs.

For Coast Guard vessels greater than 100 m (328 ft.), the cumulative total from 2009 to 2024 was 4,351 days based on review of the same dataset as used for the Navy.

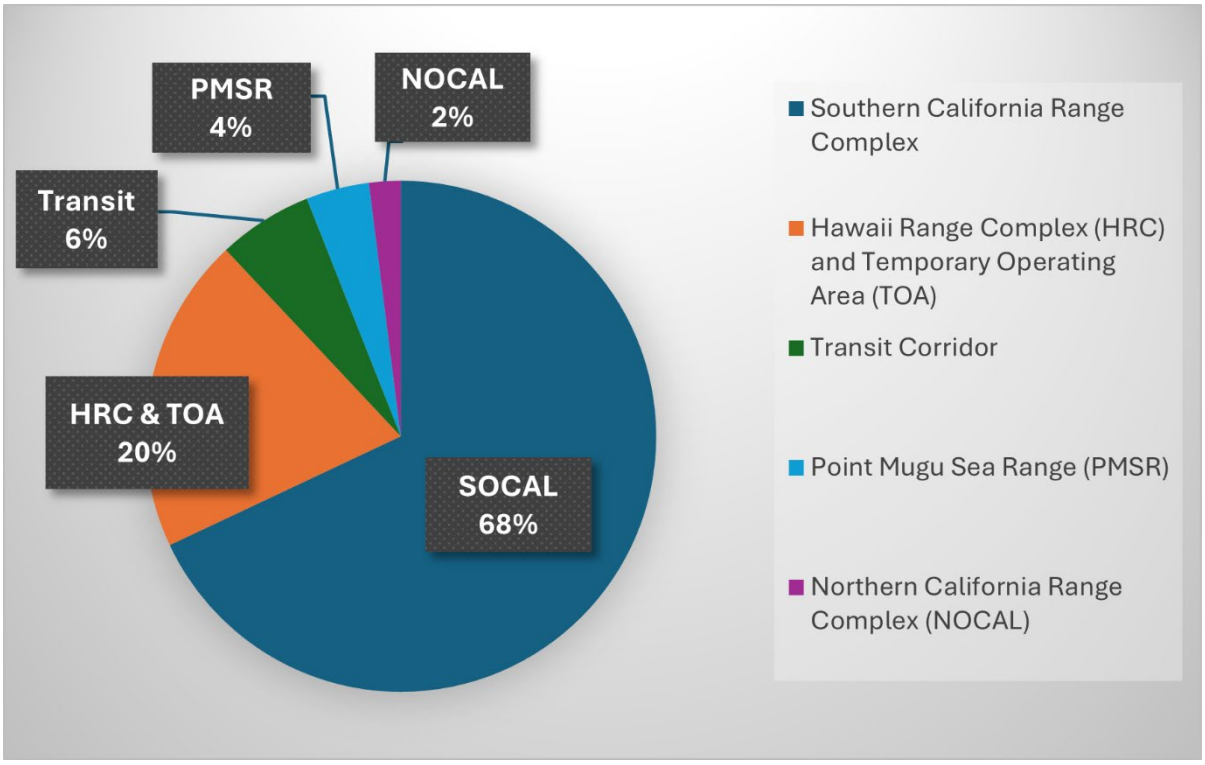


Figure I-2: U.S. Navy At-Sea Surface Vessel Days by Sub-Areas Within HCTT 2016–2023

[2] As of February 2025, there were 55 Navy surface vessels homeported in San Diego with another 7 that could be part of training in SOCAL but are homeported in the Pacific Northwest. Nineships are homeported in Hawaii although some of these would also travel to SOCAL for various integrated training activities.

[3] LCS is the smallest U.S. Navy ship class included in the vessel strike analysis based on the data available. To date, there has not been a Navy ship strike of a whale from a LCS vessel. The smallest Navy ship class with documented strikes from 2009 to 2024 is the Arleigh Burke destroyer (Guided Missile Destroyer). Guided Missile Destroyers can be up to 505 feet (154 m) long depending on destroyer build year and version.

I.4.3.3 HCTT Estimate of Future At-Sea Days (7 Years from December 2025 to December 2032)

Caveats- Navy surface vessel traffic within the HCTT Study Area has been variable by year from 2009 to August 2025. Therefore, the Navy believes an average of the 16.6-year cumulative total from 2009 to August 2025 is a sufficient prediction of future at-sea days for manned surface ships from 2026 to 2032.

In the HCTT, the 2009–2025 16.6-year total is 36,306 at-sea days, or 2,187 days per year. This was used as the starting point for an annual estimate contributing to the cumulative total of future at-sea days over the pending HCTT authorization. In addition, a new category of vessel type is soon to be transferred to HCTT for testing during the upcoming permit period. These are larger sized USVs longer than 61 m (200 ft.) in length. Although there has not been a whale ship strikes from USVs, out of an abundance of caution for this newer larger class of USVs, the Navy is adding large USV annual at-sea days with the manned annual at-sea days above (final annual at-sea days 2,187+728=2,915). Therefore, the cumulative total for the December 2025–December 2032 period for Navy manned and large USV at-sea days is 20,345 (2,915 times 7).

The Coast Guard 16.6-year average at-sea days was 262. Therefore, 262 days per year is used for the annual at-sea days between December 2025 and December 2032. To account for limitations in data availability particular to Coast Guard vessel size classes, future new vessel or repositioning home port assignments, in consideration of documented strikes from Coast Guard medium sized vessels <100 m, and out of an abundance of caution, the Coast Guard has elected to add an extra 60 at-sea days per year for the 2026–2032 period. The cumulative total for this period including the annual supplemental addition is 2,534.

I.4.3.4 Calculations Series for Estimated Strike Probabilities

The probability of a vessel strike to whales is influenced by the amount of time at-sea for Navy or Coast Guard surface vessels within the HCTT Study Area and the number of strikes over those years. This generates a specific strike rate. For the period 2009–2025, there were seven Navy strikes over 36,306 at-sea days. Dividing the Navy reported strikes by ship at-sea days (i.e., 7 divided by 36,306) results in a strike rate of 0.000193 strikes per day. For the period 2009–2025, there was one Coast Guard strike over 4,351 at-sea days. Dividing the Coast Guard reported strikes by ship at-sea days (i.e., 1 divided by 4,351) results in a strike rate of 0.000230 strikes per day.

Navy. Estimated Navy cumulative ship at-sea days within HCTT for the period from December 2025 to December 2032 is 20,345 days. The previously calculated strike rate (0.000193 strikes per day) can be multiplied by the estimated at-sea days from December 2025 to December 2032 to estimate the number of predicted whale strikes anticipated over this period (0.000193 strikes per day times 20,345 days). This formula calculates up to 3.9226 strikes from December 2025 to December 2032.

During previous consultations, the National Marine Fisheries Service and Navy agreed to using a Poisson distribution as the most appropriate statistical approach for calculating future strike probabilities. A Poisson distribution is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time. It is often used to describe random occurrences when the probability of an occurrence is small; for example, count data such as cetacean sighting data or in this case vessel strike data, often described as a Poisson or over-dispersed Poisson distribution. Therefore, the probabilities of a specific number of strikes over the period from December 2025 to December 2032 can be derived from the Poisson distribution.

The formula for a Poisson distribution is:

$$P\left\langle n \middle| \mu \right\rangle = \frac{e^{-\mu} \bullet \mu^{n}}{n!}$$

P(n|μ) is the probability of observing n events in some time interval, when the expected number of events in that time interval is μ. For this analysis, μ is the estimated December 2025–December 2032 strike rate of 3.9226. Using this strike rate (3.9226), the Poisson distribution can estimate the probability of *n* where *n*=0 (no strikes), 1 strike, 2 strikes, 3 strikes, 4 strikes, or 5 strikes, as well as the probability of *n* where *n* is greater than a number from 1 to 5. The probability of *n*>x is presented below:

P(*n*>0) is 0.980 or a 98.0 percent chance of more than zero strikes

P(*n*>1) is 0.903 or a 90.3 percent chance of more than one strike

P(*n*>2) is 0.750 or a 75.0 percent chance of more than two strikes

P(*n*>3) is 0.551 or a 55.1 percent chance of more than three strikes

P(*n*>4) is 0.356 or a 35.6 percent chance of more than four strikes

P(*n*>5) is 0.203 or a 20.3 percent chance of more than five strikes

P(*n*>6) is 0.103 or a 10.3 percent chance of more than six strikes

P(*n*>7) is 0.047 or a 4.7 percent chance of more than seven strikes

(percentages above rounded to nearest whole value)

Coast Guard. Estimated Coast Guard cumulative ship at-sea days within HCTT for the period from December 2025–December 2032 is 2,534 days. The previously calculated strike rate (0.000230 strikes per day) can be multiplied by the estimated at-sea days from December 2025 to December 2032 to estimate the number of predicted whale strikes anticipated over this period (0.000230 strikes per day times 2,534 days). This calculation estimates up to 0.5824 strikes from December 2025 to December 2032. Using this strike rate (0.5824), the Poisson distribution can estimate the probability of *n* where n=0 (no strikes), 1 strike, or 2 strikes for December 2025–December 2032:

P(*n*>0) is 0.441 or a 44.1 percent chance of more than zero strikes

P(*n*>1) is 0.116 or a 11.6 percent chance of more than one strike

P(*n*>2) is 0.021 or a 2.1 percent chance of more than two strikes

(percentages above rounded to nearest whole value)

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Appendix J Agency Correspondence

Environmental Impact Statement/
Overseas Environmental Impact Statement
Hawaii-California Training and Testing Activities
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Appendix J Agency Correspondence

Appendix J contains the correspondence between the Navy and federal or state agencies with respect to cooperating agency and joint lead agency status (Section J.1), Federal Aviation Administration Airspace Proposal Coordination (Section J.2), the Coastal Zone Management Act (Section J.3), the Endangered Species Act (Section J.4), the Magnuson-Stevens Fishery Conservation and Management Act (Section J.5), the Marine Mammal Protection Act (Section J.6), the National Historic Preservation Act (Section J.7), and the National Marine Sanctuaries Act (Section J.8).

J.1 Cooperating Agency and Joint Lead Agency Status

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

5090
Ser N4I/22U130252
November 15, 2022

Ms. Kimberly Damon-Randall
Director, Office of Protected Resources
NOAA Fisheries
1315 East West Highway
Silver Spring, MD 20910

Dear Ms. Damon-Randall:

SUBJECT: HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT - COOPERATING AGENCY

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is initiating the preparation of an Environmental Impact Statement/Overseas Environmental Statement (EIS/OEIS) to evaluate the potential environmental effects associated with military readiness training ("training") and research, development, testing, and evaluation (RDT&E, or "testing") activities around the Hawaiian Islands and off the coast of California within the Hawaii-California Training and Testing (HCTT) Study Area.

This HCTT EIS/OEIS represents the fourth phase (Phase IV) of ongoing NEPA and EO 12114 compliance for continuation of at-sea training and testing. It will evaluate military readiness activities from 2025 into the reasonably foreseeable future and incorporate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the Pacific Fleet. The Phase IV HCTT EIS/OEIS will also combine the existing Point Mugu Sea Range (PMSR) EIS/OEIS into this new EIS, as well as include expansion of the Study Area in Southern California and Northern California.

The HCTT EIS/OEIS will provide analysis of military readiness training and testing requirements and is intended to serve as a basis for the issuance of regulatory permits and authorizations. The existing Marine Mammal Protection Act (MMPA) Final Rule and Letters of Authorization will expire in December 2025 for HSTT and in July 2029 for PMSR.

To better complete the analysis required within the permitting and consultation process pursuant to the MMPA and the Endangered Species Act (ESA), the Navy believes that participation in the development of the HCTT EIS/OEIS by National Marine Fisheries Service (NMFS) is essential. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 C.F.R. Part 1501) and CEQ's 2002 guidance on cooperating agencies, Navy requests that NMFS serve as a cooperating agency for the development of the Phase IV HCTT EIS/OEIS.

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As defined in 40 CFR Section 1501.6, the Navy is the lead agency for the Phase IV HCTT EIS/OEIS. As the lead agency, the Navy will perform the following:

a. Gather all necessary background information and prepare all necessary permit applications associated with the proposed action.

b. Work with NMFS personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.

c. Determine the scope of the HCTT EIS/OEIS, including the alternatives evaluated.

d. Circulate the NEPA document to the public and other interested parties.

e. Schedule and supervise meetings held in support of the NEPA process and compile comments received from the public.

f. Maintain an administrative record and respond to any Freedom of Information Act requests relating to the HCTT EIS/OEIS.

g. Maintain and execute an overall project planning schedule. The initial HCTT EIS/OEIS Stick Chart containing major milestones is provided in enclosure (1).

h. Maintain and execute an interagency permitting schedule for MMPA and ESA authorizations. The HCTT Interagency Permitting Milestone Schedule is provided in enclosure (2).

i. Track permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy and accessible by Navy and NMFS staff.

j. Provide proposed schedule changes, as necessary, to the Interagency Permitting Milestone Schedule.

Navy respectfully requests that NMFS, in its role as a cooperating agency, provide support as follows:

a. Provide timely comments on working drafts of the EIS/OEIS. The Navy requests that comments on draft EIS/OEIS documents be provided in accordance with approved project schedules.

b. Provide timely regulatory deliverables, such as draft and final Proposed Rules, in accordance with approved project schedules.

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c. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones.

d. Respond to Navy requests for information, in particular related to review of the acoustic effects analysis and evaluation of the effectiveness of protective and mitigation measures.

e. Coordinate, to the maximum extent practicable, any public comment periods required in the MMPA permitting process with the Navy's NEPA public comment periods.

f. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.

g. Participate in project scoping and public meetings and attend any scheduled risk communication training in advance of those meetings.

h. Provide a formal, written response to this cooperating agency request.

Navy and NMFS have been working to develop the enclosed schedules integrating the requirements of NEPA, MMPA and ESA in support of environmental planning for the HCTT Study Area.

a. The schedules establish target milestones to facilitate coordination across the agencies' areas of responsibility. Each agency commits to support the target milestones within their area of responsibility, to notify other affected parties if a milestone within that signatory's area of responsibility is at risk, and to identify in-house schedule adjustments to achieve Record of Decision dates.

b. This commitment to support integrated scheduling in no way supersedes regulatory processes nor do the agencies assume the outcome of requisite regulatory analyses, agency determinations, public involvement processes or independent agency decision authorities.

c. Navy and NMFS agree to coordinate any significant changes to the schedules with their senior leadership. Proposed changes that require a waiver of the two-year CEQ timeline for completion of an Environmental Impact Statement will be forwarded to Navy and NMFS senior agency officials for approval.

d. The Navy views meeting the commitments in this agreement as critical to the successful completion of the environmental planning process for the HCTT EIS/OEIS. NMFS assistance will be invaluable in this endeavor.

3

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November 15, 2022

We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Ms. Kimberly Kler, who can be reached at [redacted] or [redacted]

Sincerely,

LEDERER.MAR C.S.1015467122 Digitally signed by LEDERER.MARC.S.1015467122 Date: 2022.11.14 17:32:43 -05'00'

M. S. LEDERER
Director, Installations (N4I)

Enclosures: 1. HCTT EIS/OEIS Overall Project Schedule
2. HCTT EIS/OEIS Interagency Permitting Milestone Schedule

Copy to:
ASN (EI&E)
DASN (EM&R)
OAGC (EI&E)
COMPACFLT (N465)
COMUSFLTFORCOM (N46)
CNIC (N45)
COMNAVSEASYSCOM
COMNAVAIRSYSCOM
COMNAVWARCOM
COMNAVREG HI (N45)
COMNAVREG SW (N45)

4

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

May 17, 2023

Deputy Chief of Naval Operations
(Fleet Readiness and Logistics (CNO N4))
Attn: Mr. Mark Snider
2000 Navy Pentagon
Washington, DC 20350-200

Dear Mr. Snider,

Thank you for your letter requesting that the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) participate as a cooperating agency in the preparation of an Environmental Impact Statement (SEIS)/Overseas Environmental Impact Statement (OEIS) to evaluate potential environmental effects of military readiness activities, which consist of training and testing, conducted within the Hawaii-California Training and Testing (HCTT) Study Area. We reaffirm our support of the Navy's decision to prepare an EIS/OEIS for HCTT and agree to be a cooperating agency, due, in part, to our responsibilities under section 101(a)(5)(A) of the Marine Mammal Protection Act and section 7 of the Endangered Species Act.

In response to your letter, NMFS staff will continue to, to the extent possible, provide support as follows:

- Provide timely comments on working drafts of the EIS/OEIS in accordance with agreed-upon project schedules;
- Provide timely regulatory deliverables, such as draft and final proposed rules, in accordance with agreed-upon project schedules;
- Adhere to the overall schedule as agreed upon with the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones;
- Respond to Navy requests for information, in particular related to review of the acoustic effects analysis and evaluation of the effectiveness of protective and mitigation measures;
- Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS; and
- Assess the need for participation in project scoping and public meetings and attend when agreed upon given staff workload and available funding.

Further, as noted in your letter, Navy and NMFS worked to develop the schedules included in Enclosures 1 and 2 to the Navy's letter (which have since been modified) integrating the requirements of NEPA, MMPA and ESA in support of environmental planning for the HCTT Study Area. NMFS commits to support the target milestones within its area of responsibility, to notify other affected parties if a milestone within our area of responsibility is at risk, and to identify in- house schedule adjustments to achieve Record of Decision dates. This commitment to support integrated scheduling in no way supersedes regulatory processes nor assumes the outcome of requisite regulatory analyses, agency determinations, public involvement processes or independent agency decision authorities. Additionally, the Navy and NMFS agree to coordinate any changes to the schedules with their senior leadership, if needed. Proposed changes that require a waiver of the two-year CEQ timeline for completion of an Environmental Impact Statement will be forwarded to Navy and NMFS senior agency officials for approval.

If you need any additional information, please contact Jolie Harrison, NMFS Office of Protected Resources, at [redacted].

Sincerely,

Kimberly Damon-Randall
Director, Office of Protected Resources

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

5090
Ser N4I/24U132016
January 24, 2024

Ms. Natasha Durkins
Vice President, Mission Support
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Dear Ms. Durkins:

SUBJECT: HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT - COOPERATING AGENCY INVITATION

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is initiating the preparation of an Environmental Impact Statement/Overseas Environmental Statement (EIS/OEIS) to evaluate the potential environmental effects associated with military readiness training ("training") and research, development, testing, and evaluation (RDT&E, or "testing") activities around the Hawaiian Islands and off the coast of California within the Hawaii-California Training and Testing (HCTT) Study Area, see enclosure (1). The HCTT EIS/OEIS will evaluate training and testing activities from 2025 into the reasonably foreseeable future and incorporate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft) and weapon systems into the Pacific Fleet.

In addition to training and testing activities, the Navy proposes to increase the offshore operating space of the SOCAL Range Complex by establishing new special use airspace proximate to the existing Warning Area 291 (W-291). The two proposed new Warning Areas (W-293 and W-294) are crucial to the Navy's ability to meet its mission because it provides the requisite maneuver space in support of advanced operational scenarios, latest generation aircraft tactics, and unmanned airspace system operations and counter-targeting. There are no other changes to the airspace.

The Navy has developed the proposal with early and ongoing coordination with multiple Federal Aviation Administration (FAA) offices. The following FAA and airspace organizations have been contacted in developing this proposal.

a. FAA Air Traffic Control Representative (ATREP), Western Service Area.

b. FAA Air Traffic Control Representative Western Service Area.

c. Oakland ARTCC.

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d. Los Angeles ARTCC.

e. Mazatlán ARTCC.

f. International Civil Aviation Organization.

As the FAA is the Federal Agency authorized to designate and manage U.S. airspace (14 CFR Parts 71, 73 and 91), the Navy views participation by the FAA as essential given the FAA's status as a Federal Agency with jurisdiction by law (40 CFR Section 1508.15) and your expertise in evaluation of airspace impacts. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 CFR Part 1501) and CEQ's 2002 guidance on cooperating agencies, Navy requests that FAA serve as a cooperating agency for the development of the HCTT EIS/OEIS. The Navy requests the FAA's cooperation in accordance with the guidelines described in the Memorandum of Understanding between the FAA and the Department of Defense Concerning Environmental Review of Special Use Airspace Actions, dated October 4, 2005 (and subsequent Change 1, effective August 2011).

The HCTT EIS/OEIS will provide analysis of military readiness training and testing requirements and is intended to serve as a basis for the issuance of regulatory permits and authorizations. The existing HSTT Marine Mammal Protection Act (MMPA) Final Rule and Letters of Authorization will expire in December 2025.

As defined in 40 CFR Section 1501.7, the Navy is the lead agency for the HCTT EIS/OEIS. As the lead agency, the Navy will perform the following:

a. Identify and provide the necessary background information, including the most up-to-date airspace utilization information, as well as scientific, encroachment and resource management analysis, as best available data, to prepare the EIS and the associated FAA Application. The EIS/OEIS will be prepared to meet FAA's NEPA requirements.

b. Work closely with the FAA on the Application for airspace expansion.

c. Determine the scope of the HCTT EIS/OEIS, including the alternatives evaluated.

d. Circulate the NEPA document to the public and other interested parties and perform public involvement under the CEQ regulations.

e. Schedule and supervise meetings held in support of the NEPA process and compile comments received from the public.

f. Maintain an administrative record and respond to any Freedom of Information Act requests relating to the HCTT EIS/OEIS.

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g. Maintain and execute an overall project planning schedule. The HCTT EIS/OEIS Stick Chart containing major milestones is provided in enclosure (2).

h. Track permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy and accessible by Navy and FAA staff.

i. Provide proposed schedule changes, as necessary, to the Interagency Permitting Milestone Schedule. Permitting Milestone Schedule based on the current project schedule is provided in enclosure (3).

Navy respectfully requests that FAA, in its role as a cooperating agency, provide support as follows:

a. Provide timely comments on working drafts of the EIS/OEIS and associated application documents. The Navy requests that comments on draft EIS/OEIS be provided in accordance with approved project schedule.

b. Respond to Navy requests for information, in particular those related to Federal management of airspace that support the Warning Area expansion.

c. Participate, as necessary, in document and comment review meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.

d. Participate in project scoping and public meetings and attend any scheduled risk communication training in advance of those meetings.

e. Prepare FAA-specific documents.

f. Maintain an administrative record and respond as appropriate to any Freedom of Information Act requests relating to this EIS.

g. Provide a formal, written response to this cooperating agency request.

The Navy views meeting the commitments in this agreement as critical to the successful completion of the environmental planning process for the HCTT EIS/OEIS. FAA assistance will be invaluable in this endeavor.

3

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The Navy published the EIS NOI on 15 December 2023 stating that FAA has been invited as a CA. We request your response in February 2024. We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Ms. Kimberly Kler, who can be reached at ([redacted] or [redacted].

Sincerely,

SINDER.MAR.S.1277897365 Digitally signed by SINDER.MARK.S.1277897365 Date: 2024.01.24 16:41:55

M. S. SINDER
Director, Installations Division

Enclosures: 1. HCTT Study Area
2. HCTT EIS/OEIS Overall Project Schedule (Stick Chart)
3. HCTT EIS/OEIS Interagency Permitting Milestone Schedule

Copy to:
ASN (EI&E)
DASN (EM&R)
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COMUSFLTFORCOM (N46)
CNIC (N45)
COMNAVSEASYSCOM
COMNAVAIRSYSCOM
COMNAVWARCOM
COMNAVREG HI (N45)
COMNAVREG SW (N45)

4

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

5090
Ser N4I/24U132018
January 24, 2024

Andrew Haley
Chief, Office of Environmental Management
Commandant (CG-47)
U.S. Coast Guard Headquarters, Stop 7714
2703 Martin Luther King Jr. Ave. SE
Washington, DC 20593

Dear Mr. Haley:

SUBJECT: HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT - JOINT LEAD AGENCY REQUEST

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is initiating the preparation of an Environmental Impact Statement/Overseas Environmental Statement (EIS/OEIS) to evaluate the potential environmental effects associated with military readiness training ("training") and research, development, testing, and evaluation (RDT&E, or "testing") activities around the Hawaiian Islands and off the coast of California within the Hawaii-California Training and Testing (HCTT) Study Area.

This HCTT EIS/OEIS represents the fourth phase (Phase IV) of ongoing NEPA and EO 12114 compliance for continuation of at-sea training and testing. It will evaluate military readiness activities from 2025 into the reasonably foreseeable future and incorporate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the Pacific Fleet. The Phase IV HCTT EIS/OEIS will also combine the existing Point Mugu Sea Range (PMSR) EIS/OEIS into this new EIS, as well as include expansion of the Study Area in Southern California and Northern California. Modernization and sustainment of ranges to support military readiness activities will be included in the HCTT EIS/OEIS Proposed Action.

To include the analysis of potential impacts caused by the conduct of Coast Guard training activities in support of various Department of Defense statutory missions, the Navy believes that participation by the U.S. Coast Guard is essential. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 C.F.R. Part 1501) and NEPA (specifically 42 U.S.C. 4336a), Navy requests that U.S. Coast Guard serve as a joint lead agency for the development of the Phase IV HCTT SEIS/OEIS.

As defined in 40 C.F.R. Section 1501.7, the Navy is the lead agency for the Phase IV HCTT SEIS/OEIS. As the lead agency, the Navy will:

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a. Gather all necessary background information and prepare all necessary permit applications associated with the proposed action.

b. Work with NMFS personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.

c. Request the participation of each joint lead agency in the NEPA process at the earliest possible time.

d. Determine the scope of the HCTT EIS/OEIS, including the alternatives evaluated.

e. Circulate the NEPA document to the public and other interested parties.

f. Schedule and supervise meetings held in support of the NEPA process and compile comments received from the public.

g. Maintain an administrative record and respond to any Freedom of Information Act requests relating to the HCTT EIS/OEIS.

h. Maintain and execute an overall project planning schedule. Schedule changes will be coordinated between Navy project lead and U.S. Coast Guard project lead. The initial HCTT EIS/OEIS Stick Chart containing major milestones is provided in enclosure (1).

i. Track permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy and accessible by Navy and U.S. Coast Guard staff.

j. Provide proposed schedule changes, as necessary, to the Interagency Permitting Milestone Schedule.

Navy respectfully requests that U.S. Coast Guard, in its role as a joint lead agency, to:

a. Participate in the NEPA process at the earliest possible time.

b. Provide and review proposed training activities that will be conducted within the HCTT Study Area.

c. Provide timely comments on working drafts of the EIS/OEIS. The Navy requests that comments on draft EIS/OEIS documents be provided in accordance with approved project schedules (see enclosure (2)).

3

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d. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones.

e. Utilize U.S. Coast Guard resources (including funding) to support role as a joint lead agency.

f. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.

g. Participate in project scoping and public meetings and attend any scheduled risk communication training in advance of those meetings.

h. Provide a formal, written response to this joint lead agency request.

The Navy views meeting the commitments in this agreement as critical to the successful completion of the environmental planning process for the HCTT EIS/OEIS. U.S. Coast Guard assistance will be invaluable in this endeavor.

We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Ms. Kimberly Kler, who can be reached at [redacted] or [redacted].

Sincerely,

SINDER.MAR.S.1277897365 Digitally signed by SINDER.MARK.S.1277897365 Date: 2024.01.24 16:42:24

M. S. SINDER
Director, Installations Division

Enclosures: 1. HCTT EIS/OEIS Overall Project Schedule (Stick Chart)
2. HCTT Master Project Schedule

4

5090
Ser N4I/24U132018
January 24, 2024

Copy to (w/o enclosures):
ASN (EI&E)
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COMNAVREG HI (N45)
COMNAVREG SW (N45)
MARFORPAC
PACAF
USARPAC

5

U.S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

2703 Martin Luther King Jr. Avenue SE
U.S. Coast Guard STOP 7714
Washington DC 20593-7714
Staff Symbol: CG-47D
Phone: (202) 475-5690
Fax: (202) 372-8419

5090
January 30, 2024

Mr. M.S. Sinder
Director, Installations Division (N4I)
Office of the Chief of Naval Operations
2000 Navy Pentagon
Washington DC 20350-2000

Dear Mr. Sinder:

The Coast Guard appreciates the Navy's 24 January 2024 request to join the Hawaii-California Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement (HCTT EIS/OEIS) team as a joint lead agency. In accordance with 40 CFR Section 1501.7, we recognize the Navy's role as the lead agency in the development of the HCTT EIS/OEIS which will cover training and testing activities from 2025 to the foreseeable future.

The Coast Guard is committed to being a meaningful partner in the development of the HCTT EIS/OEIS and related environmental compliance efforts. Specifically, the Coast Guard will:

a. Provide timely comments on working drafts of the EIS/OEIS and provide these comments in accordance with approved project schedules.
b. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy if there is a likelihood of missing schedule milestones.
c. Respond to Navy requests for information, in particular related to proposed training activities that will be conducted in the HCTT Study Area.
d. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.
e. Participate in project public meetings and attend any scheduled risk communication training in advance of those meetings.
f. Provide formal, written responses when requested.

The Coast Guard views this agreement as critical to the successful completion of the environmental planning process for the HCTT EIS/OEIS. We appreciate your invitation and look forward to working together. The Coast Guard's point of contact for this action is Mr. Neil Sheehan, [redacted], email: [redacted].

Sincerely,

A. S. Haley
Chief, Office of Environmental Management
U.S. Coast Guard

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0071
February 5, 2024

Major General James B. Bartholomees
Chief of Staff
U.S. Army Pacific
410 Wisser Rd, Bldg 600A, S2102
Fort Shafter, HI 96858

Dear Major General Bartholomees:

Subj: HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT – JOINT LEAD AGENCY

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is initiating the preparation of an Environmental Impact Statement / Overseas Environmental Statement(EIS/OEIS) to evaluate the potential environmental effects associated with military readiness training ("training") and research, development, testing, and evaluation (RDT&E, or "testing") activities around the Hawaiian Islands and off the coast of California within the Hawaii-California Training and Testing (HCTT) Study Area.

This HCTT EIS/OEIS represents the fourth phase (Phase IV) of ongoing NEPA and EO 12114 compliance for continuation of at-sea training and testing. It will evaluate military readiness activities from 2025 into the reasonably foreseeable future and incorporate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the Pacific theater. The Phase IV HCTT EIS/OEIS will also combine the existing Point Mugu Sea Range (PMSR) EIS/OEIS into this new EIS, as well as include expansion of the Study Area in Southern California and Northern California. Modernization and sustainment of ranges to support military readiness activities will be included in the HCTT EIS/OEIS Proposed Action.

To include the analysis of potential impacts caused by the conduct of Army training activities in support of various Department of Defense statutory missions, the Navy believes that participation by the U.S. Army is essential. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 C.F.R. Part 1501) and NEPA (specifically 42 U.S.C. 4336a), Navy requests that U.S. Army serve as a joint lead agency for the development of the Phase IV HCTT SEIS/OEIS.

As defined in 40 CFR Section 1501.7, the Navy is the lead agency for the Phase IV HCTT SEIS/OEIS. As the lead agency, the Navy will:

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a. Gather all necessary background information and prepare all necessary permit applications associated with the proposed action.

b. Work with National Marine Fisheries Service personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.

c. Request the participation of each joint lead agency in the NEPA process at the earliest possible time.

d. Determine the scope of the HCTT EIS/OEIS, including the alternatives evaluated.

e. Circulate the NEPA document to the public and other interested parties.

f. Schedule and supervise meetings held in support of the NEPA process and compile comments received from the public.

g. Maintain an administrative record and respond to any Freedom of Information Act requests relating to the HCTT EIS/OEIS.

h. Maintain and execute an overall project planning schedule. The initial HCTT EIS/OEIS Stick Chart containing major milestones is provided in enclosure (1).

i. Track permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy and accessible by Navy and U.S. Army Pacific staff.

j. Provide proposed schedule changes, as necessary, to the Interagency Permitting Milestone Schedule.

Navy respectfully requests U.S. Army, in its role as a joint lead agency, to:

a. Participate in the NEPA process at the earliest possible time.

b. Provide and review proposed training activities that will be conducted within the HCTT Study Area.

c. Provide timely comments on working drafts of the EIS/OEIS. The Navy requests that comments on draft EIS/OEIS documents be provided in accordance with approved project schedules (see enclosure 2).

d. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones.

e. Utilize U.S. Army resources (including funding) to support role as a joint lead agency.

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f. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.

g. Participate in project scoping and public meetings and attend any scheduled risk communication training in advance of those meetings.

h. Provide a formal, written response to this joint lead agency request.

The Navy views meeting the commitments in this agreement as critical to the successful completion of the environmental planning process for the HCTT EIS/OEIS. U.S. Army assistance will be invaluable in this endeavor.

We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Mr. Alexander Stone, who can be reached via phone at ([redacted] or via email at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosures: 1. HCTT EIS/OEIS Overall Project Schedule (Stick Chart)
2. HCTT Master Project Schedule

Copy to: (w/o enclosures)
OPNAV N4I
ASN (EI&E)
DASN (EM&R)
OAGC (EI&E)
COMUSFLTFORCOM (N46)
CNIC (N45)
COMNAVSEASYSCOM
COMNAVAIRSYSCOM
ONR
COMNAVWARCOM
COMNAVREG HI (N45)
COMNAVREG SW (N45)
MARFORPAC
USCG
PACAF

3

DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY PACIFIC
FORT SHAFTER, HAWAII 96858-5100

Captain J.H. Beattie
Deputy Fleet Civil Engineer
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

5090
March 8, 2024

Dear Capt. Beattie,

U.S. Army Pacific (USARPAC) appreciates the Navy's 5 February 2024 request to join the Hawaii-California Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement (HCTT EIS/OEIS) team as a joint lead agency. In accordance with 40 CFR Section 1501.7 we recognize the Navy's role as lead agency in the development of the HCTT EIS/OEIS which will cover training and testing activities from 2025 to the foreseeable future.

USARPAC is committed to being a meaningful partner in the development of the HCTT EIS/OEIS and related environmental efforts. Specifically, USARPAC will:

a. Provide and review proposed Army training activities that are considered in the analysis within the HCTT study area.
b. Provide timely comments on working drafts of the EIS/OEIS and provide these comments in accordance with approved schedules.
c. Participate in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.
d. Participate in project public meetings and attend any scheduled risk communication training in advance of those meetings.
e. Provide formal, written responses when required.

USARPAC views this agreement as critical to the successful completion of the environmental analysis process for the HCTT EIS/OEIS. We appreciate your invitation and look forward to working on this collaborative effort. The point of contact for USARPAC for this action is Mr. Zack Walker, [redacted] email: [redacted].

Sincerely,

James B. Bartholomees
Major General, USA
Chief of Staff

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

5090
Ser N4I/24U132017
January 24, 2024

Robert E. Moriarity
Deputy Assistant Secretary of the Air Force (Installations)
1665 Air Force Pentagon
Washington, DC 20330-1665

Dear Mr. Moriarity:

SUBJECT: HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT - JOINT LEAD AGENCY REQUEST

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is initiating the preparation of an Environmental Impact Statement/Overseas Environmental Statement(EIS/OEIS) to evaluate the potential environmental effects associated with military readiness training ("training") and research, development, testing, and evaluation (RDT&E, or "testing") activities around the Hawaiian Islands and off the coast of California within the Hawaii-California Training and Testing (HCTT) Study Area.

This HCTT EIS/OEIS represents the fourth phase (Phase IV) of ongoing NEPA and EO 12114 compliance for continuation of at-sea training and testing. It will evaluate military readiness activities from 2025 into the reasonably foreseeable future and incorporate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the Pacific Fleet. The Phase IV HCTT EIS/OEIS will also combine the existing Point Mugu Sea Range (PMSR) EIS/OEIS into this new EIS, as well as include expansion of the Study Area in Southern California and Northern California. Modernization and sustainment of ranges to support military readiness activities will be included in the HCTT EIS/OEIS Proposed Action.

To include the analysis of potential impacts caused by the conduct of Air Force training activities in support of various Department of Defense statutory missions, the Navy believes that participation by the U.S. Air Force is essential. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 CFR Part 1501) and NEPA (specifically 42 U.S.C. 4336a), Navy requests that U.S. Air Force serve as a joint lead agency for the development of the Phase IV HCTT SEIS/OEIS. The HCTT team has been working with Pacific Air Force Airspace Manager, Mr. Steven York, to define those activities that need to be included in the proposed action.

As defined in 40 CFR Section 1501.7, the Navy is the lead agency for the Phase IV HCTT SEIS/OEIS. As the lead agency, the Navy will:

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January 24, 2024

a. Gather all necessary background information and prepare all necessary permit applications associated with the proposed action.

b. Work with NMFS personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.

c. Request the participation of each joint lead agency in the NEPA process at the earliest possible time.

d. Determine the scope of the HCTT EIS/OEIS, including the alternatives evaluated.

e. Circulate the NEPA document to the public and other interested parties.

f. Schedule and supervise meetings held in support of the NEPA process and compile comments received from the public.

g. Maintain an administrative record and respond to any Freedom of Information Act requests relating to the HCTT EIS/OEIS.

h. Maintain and execute an overall project planning schedule. Schedule changes will be coordinated between Navy project lead and U.S. Coast Guard project lead. The initial HCTT EIS/OEIS Stick Chart containing major milestones is provided in enclosure (1).

i. Track permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy and accessible by Navy and U.S. Air Force staff.

j. Provide proposed schedule changes, as necessary, to the Interagency Permitting Milestone Schedule.

Navy respectfully requests that U.S. Air Force, in its role as a joint lead agency, to:

a. Participate in the NEPA process at the earliest possible time.

b. Provide and review proposed training activities that will be conducted within the HCTT Study Area.

c. Provide timely comments on working drafts of the EIS/OEIS. The Navy requests that comments on draft EIS/OEIS documents be provided in accordance with approved project schedules (see Enclosure 2).

d. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones.

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5090
Ser N4I/24U132017
January 24, 2024

e. Utilize U.S. Air Force resources (including funding) to support role as a joint lead agency.

f. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.

g. Participate in project scoping and public meetings and attend any scheduled risk communication training in advance of those meetings.

h. Provide a formal, written response to this joint lead agency request.

The Navy views meeting the commitments in this agreement as critical to the successful completion of the environmental planning process for the HCTT EIS/OEIS. U.S. Air Force assistance will be invaluable in this endeavor.

We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Ms. Kimberly Kler, who can be reached at [redacted] or [redacted]

Sincerely,

SINDER.MAR.S.1277897365 Digitally signed by SINDER.MARK.S.1277897365 Date: 2024.01.24 16:42:48

M. S. SINDER
Director, Installations Division

Enclosures: 1. HCTT EIS/OEIS Overall Project Schedule (Stick Chart)
2. HCTT Master Project Schedule

3

5090
Ser N4I/24U132017
January 24, 2024

Copy to (w/o enclosure):
ASN (EI&E)
DASN (EM&R)
OAGC (EI&E)
COMPACFLT (N465)
COMUSFLTFORCOM (N46)
CNIC (N45)
COMNAVSEASYSCOM
COMNAVAIRSYSCOM
COMNAVWARCOM
ONR
COMNAVREG HI (N45)
COMNAVREG SW (N45)
MARFORPAC
USARPAC
USCG

4

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

OFFICE OF THE SECRETARY

June 16, 2024

SAF/IEI
1665 Air Force Pentagon
Washington, DC 20330-1665

Mr. Mark S. Sinder
Director, Installations Division
Office of The Chief of Naval Operations
2000 Navy Pentagon
Washington DC 20350-200

Dear Mr. Sinder:

The Department of the Air Force (DAF) accepts the Navy's January 24, 2024 invitation to participate as a Joint Lead Agency in the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS).

The DAF understands that the EIS/OEIS will evaluate the potential environmental effects associated with military readiness training and research, development, testing, and evaluation activities around the Hawaiian Islands and off the coast of California, within the HCTT Study Area.

As generally prescribed in 40 C.F.R. 1501.7, as a Joint Lead Agency the DAF will be expected to participate in various portions of the EIS/OEIS development and to the extent practicable will:

a. Participate in the NEPA process at the earliest possible time.

b. Provide and review proposed training activities that will be conducted within the HCTT Study Area.

c. Provide for timely review and comment on project information and working drafts of the EIS/OEIS per the approved project schedule.

d. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestone.

e. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the EIS/OEIS.

f. Participate in public meetings and attend any scheduled risk communication training in advance of those meetings.

My headquarters points of contact are Ms. Laura Yates at [redacted] and Mr. Jack Bush at [redacted]. For day-to-day Pacific region activities, please contact Mr. Steven York, ([redacted]).

Sincerely,

MORIARTY.ROBERT.E.1013267584 Digitally signed by MORIARTY.ROBERT.E.1013267584 Date: 2024.06.16 07:33:16 -04'00'

ROBERT E. MORIARTY, P.E., SES
Deputy Assistant Secretary of the Air Force
(Installations)

cc:
SAF/GCN
AF/A4C/A3TI
NGB/A3/4/8
AFLOA/JAOE-FSC
HQ PACAF/A3/8
HQ AFIMSC/CC
HQ AFCEC/CC
AFIMSC, Det 2/CD

2

J.2 Coastal Zone Management Act

J.2.1 California

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0222
March 31, 2025

Ms. Kate Huckelbridge
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105-2219

Dear Ms. Huckelbridge:

SUBJECT: CONSISTENCY DETERMINATION FOR PROPOSED MILITARY READINESS ACTIVITIES WITHIN CALIFORNIA

In accordance with 15 C.F.R. §930,Subpart C for Consistency for Federal Agency Activities, the U.S. Navy, Commander, U.S. Pacific Fleet is submitting the enclosed Consistency Determination (CD) for proposed military readiness activities within the California Study Area as proposed in the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement / Overseas Environmental Impact Statement (EIS/OEIS). The enclosed CD documents the military's consistency with the applicable enforceable policies of the California Coastal Management Program, to the maximum extent practicable. The Navy is providing an informational brief to the Coastal Commission on April 11, 2025 in Santa Barbara and requests that the CD be considered by the Commission at the June 11-13, 2025 meeting in San Diego. The majority of these military readiness activities are a continuation of activities that have been conducted off the coast of California for decades and have been the subject of prior consistency reviews by the Commission, most recently in 2018 (Hawaii-Southern California Testing and Training) and 2022 (Point Mugu Sea Range). Some new areas for amphibious approaches in Central California and range modernizations are contemplated which are evaluated against enforceable policies as well.

If you have any questions, please contact Mr. Alex Stone, U.S. Pacific Fleet, [redacted] or Ms. Kelly Finn, Commander Navy Region Southwest, at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: (see next page)

5090
Ser N46/0222
March 31, 2025

Enclosure: CD for the California Study Area

Copy to:
Chief of Naval Operations (N4I) (w/o enclosure)
Commander, Navy Region Southwest (N40) (w/o enclosure)
Mary Alice Evans, Hawaii Department of Business, Economic Development & Tourism, Office of Planning (w/enclosure)

2

STATE OF CALIFORNIA - NATURAL RESOURCES AGENCY GAVIN NEWSOM, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

ENERGY, OCEAN RESOURCES AND FEDERAL CONSISTENCY
455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105-2421
VOICE (415) 904-5200

June 13, 2025

Admiral Stephen Koehler
Department of the Navy
Commander
United States Pacific Fleet
ATTN: Captain J.H. Beattie, U.S. Navy, Deputy Fleet Engineer
250 Makalapa Drive
Pearl Harbor, HI 96860-3131
Sent via e-mail to: [redacted] and [redacted]

Re: **CD-0003-25**, Department of the Navy, Consistency Determination, Military Readiness Activities in the California portion of the Hawaii-California Training and Testing (HSTT) Study Area

Dear Admiral Koehler,

On June 12, 2025, by unanimous decision, the California Coastal Commission objected to the above-referenced consistency determination submitted by the Navy for the continuation and expansion of military readiness program activities of the California portion of Hawaii- California Training and Testing Program. The Commission's objection was based on its conclusion that the activities as proposed were not fully consistent with the marine resource protection policy (Section 30230) of the California Coastal Act, which is one of the enforceable policies of the California Coastal Management Program (CCMP).

Section 30230 of the Coastal Act states:

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

The grounds for the Commission's objection under the enforceable policies of the CCMP are set forth in the adopted findings enclosed with this letter. The Commission further determined that if the Navy would agree to modify the proposal to include the following measures, the proposal could be found consistent with the requirements of the applicable CCMP marine resources policy (Section 30230):

(1) Modifications to proposed geographic mitigation areas:
   a. Expand the boundaries of the geographic mitigation areas for large whales, with prohibitions on use of MF1 mid-frequency sonar and in-water

explosives, to include sensitive areas: (i) the 2024 "Core" BIAs for blue, humpback, and fin whales, for their designated seasons; (ii) any biologically sensitive area NMFS may designate at a future date; (iii) nearshore areas; (iv) National Marine Sanctuaries; and (v) State-designated marine protected areas and adjacent Federal marine protected areas, year round;

b. Seasonally limit the use of in-water explosives in the Central and Northern California Large Whale Mitigation Areas;
c. Expand the seasonality of all three whale mitigation areas to April 1 – December 31;
d. Reduce the threshold number of large whales in the real-time awareness area to one or more rather than four or more;
e. Include the San Nicholas Island Mitigation Area and Santa Barbara Island Mitigation Area, as previously included by the Navy in its 2018-2025 HSTT project, as continued geographic mitigation areas with prohibitions on use of mid-frequency sonar and in-water explosives in those mitigation areas; and
f. Limit use of dipping sonar to the maximum extent practicable within geographic mitigation areas for whales (including for any modifications adopted for areas/requirements from other subparts of Measure 1);

(2) Establishment of larger shutdown areas (up to 2 km) during use of MF-1 sonar (i.e., shut down if a marine mammal or sea turtle is detected within 2 km of the mid-frequency sonar source);

(3) Reduction in sonar intensity under low-visibility conditions;

(4) Limitations on vessel speeds in sensitive areas to 10 knots (unless higher speeds are critical to meet training needs); and

(5) Use of NMFS-certified marine mammal observers on all ships during the use of MF1 sonar sources and explosives for training and testing purposes

(6) Mandatory use of support vessels with assigned lookouts for uncrewed surface vessels when they are traveling faster than 10 knots

(7) Seasonal limits to amphibious vehicle operations in the surf-zone in the four new amphibious corridors to protect nesting birds and pinniped haul-outs

(8) Development and implementation of a rocky reef and hard substrate impact mitigation plan

The CZMA regulations preclude the Navy from proceeding to implement this proposal despite the Commission's objection to the consistency determination, unless the Navy makes certain determinations as discussed in the federal consistency regulations (15 CFR § 930.43), which provide, in part:

> (a) In the event the State agency objects to the Federal agency's consistency determination, the State agency shall accompany its response to the Federal agency with its reasons for the objection and supporting information. The State agency response shall describe:
>
> (1) How the proposed activity will be inconsistent with specific enforceable policies of the management program; and
>
> (2) The specific enforceable policies (including citations).

2

(3) The State agency should also describe alternative measures (if they exist) which, if adopted by the Federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the enforceable policies of the management program. Failure to describe alternatives does not affect the validity of the State agency's objection.

…

(c) State agencies shall send to the Director a copy of objections to Federal agency consistency determinations.

(d) In the event of an objection, Federal and State agencies should use the remaining portion of the 90-day notice period (see § 930.36(b)) to attempt to resolve their differences. If resolution has not been reached at the end of the 90-day period, Federal agencies should consider using the dispute resolution mechanisms of this part and postponing final federal action until the problems have been resolved. At the end of the 90-day period the Federal agency shall not proceed with the activity over a State agency's objection unless:

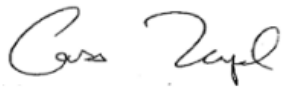
(1) the Federal agency has concluded that under the "consistent to the maximum extent practicable" standard described in section 930.32 consistency with the enforceable policies of the management program is prohibited by existing law applicable to the Federal agency and the Federal agency has clearly described, in writing, to the State agency the legal impediments to full consistency (See §§ 930.32(a) and 930.39(a)), or

(2) the Federal agency has concluded that its proposed action is fully consistent with the enforceable policies of the management program, though the State agency objects.

(e) If a Federal agency decides to proceed with a Federal agency activity that is objected to by a State agency, or to follow an alternative suggested by the State agency, the Federal agency shall notify the State agency of its decision to proceed before the project commences.

If you have questions, please contact Walt Deppe at [redacted].

Sincerely,



Cassidy Teufel
Deputy Director
Energy, Ocean Resources, Federal Consistency, and Technical Services

Enclosed: California Coastal Commission Adopted Findings for CD-0003-25

Cc via email: Jeffrey Payne, Ph.D, National Oceanic and Atmospheric Administration, Office for Coastal Management [redacted]

3

STATE OF CALIFORNIA - NATURAL RESOURCES AGENCY GAVIN NEWSOM, GOVERNOR

CALIFORNIA COASTAL COMMISSION
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Th9a

Filed:	4/1/25
60th Day:	5/31/25
75th Day:	6/15/25
Staff:	WD-V
Staff Report:	5/28/25
Hearing Date:	6/12/25
Vote:	10-0

ADOPTED FINDINGS

Consistency Determination No.	**CD-0003-25**
Applicant:	Department of the Navy
Location:	California portion of Hawaii-California Training and Testing Study Area offshore of all coastal counties of California from Mendocino to San Diego (Exhibit 1)
Project Description:	Continuation and expansion of military readiness program activities of the California portion of Hawaii- California Training and Testing Program
Commission Action:	Objection

SUMMARY OF COMMISSION ACTION

The proposed project described by the U.S. Navy in its consistency determination includes a wide range of military training and testing activities that would be carried out over seven years across approximately 330,000 square miles of ocean offshore of California. The activities would be mostly focused in open ocean waters far from shore but would extend to nearshore waters and the mean-high tide line in several locations. Proposed activities include various types of air, surface, and underwater warfare and would involve widespread operation of crewed and uncrewed surface and submarine vessels and aircraft, the use of active high-energy sonar, explosives and other munitions, high-energy lasers, air guns, the deployment of training structures,

underwater platforms and fiber optic cables and instrumentation on the seafloor, and other activities that would affect coastal resources.

Although this is the fifth such multi-year Navy offshore training and testing program for which the Navy has submitted a consistency determination for the Commission's review, the currently proposed program includes several notable differences: (1) rather than limited to areas offshore of San Diego and southern California like previous programs, the current proposal includes extensive training areas and activities offshore of central and northern California as well; (2) new and expanded use of large uncrewed surface and underwater vessels; (3) reductions in the amount of area offshore of southern California (by approximately 478 square miles) designated for seasonal avoidance due to the presence of sensitive marine mammals and habitats; and (4) significant increases in the number of individual marine mammals (particularly whales, dolphins and porpoises) estimated to be subjected to disturbance and injury. Maximum estimates of each over the full seven year program are 38,629,542 disturbances ("level B take"), 30,905 injuries ("level A take") and 231 mortalities.

Given the extensive scope of the proposed project, involving hundreds of individual actions spread across multiple years and much of the state's offshore waters, and the limited time provided for staff review, that review effort was focused primarily on areas of the most sensitive coastal resources and activities with the highest levels of anticipated and potential adverse impacts rather than a detailed evaluation of everything proposed.

Based on that review, the proposed project would result in significant adverse impacts to California's marine resources, particularly areas and species of special biological and economic significance. These adverse impacts would primarily result from the Navy's proposed use of high-energy mid-frequency sonar that generates impulse sounds that can travel dozens of miles within the hearing and communication ranges of a wide variety of marine mammals, as well as detonations of explosives and other ordinance that can injury and destroy marine wildlife and habitats, and the widespread use of vessels, including some at high speeds without crew, that pose a mortality risk for whales due to collisions.

The scale and scope of these anticipated and potential adverse impacts poses a fundamental inconsistency with the coastal and marine resources protection policy of the California Coastal Management Program, Section 30230, which requires enhancement (and where feasible restoration) of the overall marine environment, as well as special protection for areas and species of special biological or economic significance. To address this inconsistency the Commission has identified a variety of alternative measures that would help reduce and avoid the proposed project's anticipated and potential adverse impacts. These alternative measures include: (1) Expansion and extension of proposed sonar and explosives avoidance areas, including inclusion of National Marine Sanctuaries and State-designated Marine Protected Areas and limits on use of dipping sonar; (2) Establishment of larger safety buffers for marine mammals during high-energy mid-frequency (MF1) sonar use; (3) Reduction in sonar intensity under low-visibility conditions; (4) Limitations on crewed and uncrewed vessel

speeds in sensitive areas to 10 knots (unless higher speeds are critical to meet training needs); (5) Use of more effective marine mammal observers on all ships during the use of MF1 sonar sources and explosives; (6) Mandatory use of support vessels with assigned lookouts for uncrewed surface vessels when they are traveling faster than 10 knots; (7) Seasonal limits to amphibious vehicle operations in the surf-zone to protect nesting birds and seal and sea lion haul-outs; and (8) Development and implementation of a rocky reef and hard substrate impact mitigation plan to offset habitat loss and damage resulting from seafloor cable and infrastructure construction.

However, in recent communications with Commission staff, the Navy has rejected these measures. As such, Commission staff recommended the Commission object to the proposed seven-year Navy offshore training and testing program.

The current program is the fifth of these Navy multi-year offshore training and testing programs reviewed by the Commission since the Navy began submitting consistency determinations for them in 2006. The Commission's review has resulted in an objection in each of those prior instances. However, in each case, as allowed for in the Coastal Zone Management Act's federal consistency regulations, the Navy has disagreed with the Commission, provided notice of its conclusion that its proposed activity is fully consistent with the enforceable policies of the state's coastal management program and has proceeded with implementation of its training and testing programs. Following past Commission objections, the Navy has often worked to help address the concerns raised by the Commission as a result of its review, including through refinement and addition of adverse impact avoidance and minimization measures.

For these reasons, the Commission has determined that the training and testing program described in the consistency determination is inconsistent with the marine resources policy of the CCMP (Section 30230). The Commission therefore **objects** to the Navy's consistency determination CD-0003-25.

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CD-0003-25 (Navy)

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Exhibit 31 – Mitigation Area and BIA Coverage

I. FEDERAL AGENCY'S CONSISTENCY DETERMINATION

The Department of the Navy (Navy) has determined the project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP).

II. MOTION AND RESOLUTION

Motion:

*I move that the Commission **concur** with Consistency Determination CD-0003-25 on the grounds that the project described therein would be fully consistent, and thus consistent to the maximum extent practicable, with the enforceable policies of the CCMP.*

Staff recommends a **NO** vote on the forgoing motion. Failure of this motion will result in an objection with the determination of consistency, and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution:

*The Commission hereby **objects** with Consistency Determination CD-0003-25 on the grounds that the project would not be consistent to the maximum extent practicable, with the enforceable policies of the CCMP.*

III. APPLICABLE LEGAL AUTHORITIES

A. STANDARD OF REVIEW

The federal Coastal Zone Management Act ("CZMA"), 16 U.S.C. § 1451-1464, requires that federal agency activities affecting coastal resources be "carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs." Id. at § 1456(c)(1)(A). The implementing regulations for the CZMA ("federal consistency regulations"), at 15 C.F.R. § 930.32(a)(1), define the phrase "consistent to the maximum extent practicable" to mean:

> … fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.

This standard allows a federal activity that is not fully consistent with California's Coastal Management Program ("CCMP") to proceed, if full compliance with the CCMP would be "prohibited by existing law applicable to the Federal agency." In its consistency determination, the Navy did not argue that full consistency is prohibited by existing law applicable to it or provide any documentation to support a maximum extent practicable argument. Therefore, there is no basis to conclude that existing law applicable to the Federal agency prohibits full consistency. Since the Navy has raised no issue of practicability, as so defined, the standard before the Commission is full

consistency with the enforceable policies of the CCMP, which are the policies of Chapter 3 of the Coastal Act (Cal. Pub. Res. Code §§ 30200-30265.5).

B. State Agency Objections

The current program is the fifth multi-year offshore training and testing program reviewed by the Commission since the Navy began submitting consistency determinations for them in 2006. The Commission's review has resulted in an objection in each of those prior instances. In the initial two reviews, the objection resulted from the Navy's rejection of the conditions of approval the Commission adopted and in the subsequent reviews, the Commission objected based on a finding that the proposed activities were inconsistent with the marine resource protection policies of the California Coastal Management Program. However, these objections by the Commission have not resulted in any impediment or delay to the Navy's implementation of its training and testing programs. The Coastal Zone Management Act's federal consistency regulations that establish the Commission's review authority allow a federal agency to proceed with its proposed activity despite an objection from a coastal state after it notifies the state agency that it still concludes its proposed agency activity is fully consistent with the enforceable policies of the state's coastal management program. Following past Commission objections, however, the Navy has often worked to help address the concerns raised by the Commission as a result of its review, including through refinement and addition of adverse impact avoidance and minimization measures, and has moved forward with its training and testing programs, as provided by the federal consistency regulations.

Specifically, the federal consistency regulations (15 CFR § 930.43) provide:

> (a) In the event the State agency objects to the Federal agency's consistency determination, the State agency shall accompany its response to the Federal agency with its reasons for the objection and supporting information. The State agency response shall describe:
>
> > (1) How the proposed activity will be inconsistent with specific enforceable policies of the management program; and
> >
> > (2) The specific enforceable policies (including citations).
> >
> > (3) The State agency should also describe alternative measures (if they exist) which, if adopted by the Federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the enforceable policies of the management program. Failure to describe alternatives does not affect the validity of the State agency's objection.
>
> (b) If the State agency's objection is based upon a finding that the Federal agency has failed to supply sufficient information, the State agency's response must describe the nature of the information requested and the necessity of having such information to determine the consistency of the Federal agency activity with the enforceable policies of the management program.

(c) State agencies shall send to the Director a copy of objections to Federal agency consistency determinations.

(d) In the event of an objection, Federal and State agencies should use the remaining portion of the 90-day notice period (see § 930.36(b)) to attempt to resolve their differences. If resolution has not been reached at the end of the 90-day period, Federal agencies should consider using the dispute resolution mechanisms of this part and postponing final federal action until the problems have been resolved. At the end of the 90-day period the Federal agency shall not proceed with the activity over a State agency's objection unless:

(1) the Federal agency has concluded that under the "consistent to the maximum extent practicable" standard described in section 930.32 consistency with the enforceable policies of the management program is prohibited by existing law applicable to the Federal agency and the Federal agency has clearly described, in writing, to the State agency the legal impediments to full consistency (See §§ 930.32(a) and 930.39(a)), or

(2) the Federal agency has concluded that its proposed action is fully consistent with the enforceable policies of the management program, though the State agency objects.

(e) If a Federal agency decides to proceed with a Federal agency activity that is objected to by a State agency, or to follow an alternative suggested by the State agency, the Federal agency shall notify the State agency of its decision to proceed before the project commences.

IV. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION

The proposed action[1] in the U.S. Navy (Navy) consistency determination (CD) submittal is for the continuation and expansion of military readiness program activities from December 2025 to December 2032[2], comprised of a wide and diverse range of training and testing efforts and the installation and upgrading of subsea infrastructure. Proposed program activities for various types of air, surface, and underwater warfare would involve widespread operation of crewed and uncrewed surface and submarine vessels and aircraft, the use of active sonar, explosives and other munitions, high-energy lasers,

[1] The CD clarifies: "The Action Proponents include the U.S. Department of the Navy (Navy) (including both the U.S. Navy and the U.S. Marine Corps [USMC]) jointly with the U.S. Coast Guard (USCG), U.S. Army (Army), and U.S. Air Force (USAF). The Navy is the lead agency and as the lead agency, the Navy represents the Action Proponents."

[2] Consistent with past practice, the Navy's current CD covers a multi-year period of training and testing activities. While the first consistency determination reviewed by the Commission was for a two-year period, this was extended to a five year period in the Navy's 2008 CD and to a seven year period in its 2018 CD, aligning with the term of the Marine Mammal Protection Act (MMPA) authorization sought by the Navy from the National Marine Fisheries Service. The current CD describes a seven year period (from 2025-2032) that similarly aligns with the currently sought term of MMPA authorization.

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air guns, the deployment of training structures, underwater platforms and fiber optic cables and instrumentation on the seafloor, temporary testing of small underwater energy generation devices, and other activities that would affect coastal resources. The Navy states in its CD that the purpose of the Proposed Action: "…is to ensure the U.S. military services are able to organize, train, and equip service members and personnel, needed to meet their respective national defense missions, in accordance with their Congressionally mandated requirements under Title 10[3]."

The proposed project would occur in the California Study Area (**Exhibit 1**), the portion of the larger Hawaii-California Training and Testing (HCTT) Study Area[4] (**Exhibit 2**) occurring offshore of California and extending seaward from the mean high-water mark to offshore training and testing areas in the Pacific Ocean up to approximately 690 mi offshore. The California Study Area encompasses an area of roughly 330,000 square miles (mi^2), and includes within it, airspace, ocean surface and underwater areas. While the project area includes some nearshore areas within the state's Coastal Zone, as defined in section 30103 of the Coastal Act, the bulk of the proposed activities would occur seaward of the state's Coastal Zone, in federal and international waters.[5]

The California Study Area is comprised of several distinct geographic areas referred to by the Navy as "ranges," that have historically supported different types of training exercises and related infrastructure, including structures and equipment located underwater or on adjacent land areas. The Navy proposes expansion of several of its ranges in its CD and has included in the proposed project activities within portions of California's offshore waters that have not been included in prior federal consistency reviews carried out by the Commission (such as an area offshore of Northern California) or have been reviewed separately in previous years (such as the Point Mugu Sea Range offshore of Los Angeles, Ventura, Santa Barbara and San Luis Obispo Counties). As such, the proposed project represents a change from CDs reviewed by the Commission in the past that focused on Navy training and testing activities offshore of southern California and now encompasses activities offshore of most of the state. The distinct ranges covered by the current CD include: (1) an expanded Southern California (SOCAL) Range Complex (including the Silver Strand Complex and San

[3] Footnote from CD: "See Title 10, Sections 8062 (Navy), 8063 (USMC), 7062 (Army), 9062 (USAF) U.S.C. and Title 14, Sections 101 and 102 U.S.C. (USCG) for each service's specific language. Army and USAF are included only for their activities in Hawaii with potential in-water effects."
[4] The full HCTT Study Area, combining the California Study Area with the Hawaii Study Area and Transit Corridor portions of the HCTT, is analyzed in the Navy's 2024 HCTT Draft EIS/OEIS (Environmental Impact Statement/Overseas Environmental Impact Statement), which can be found at the Navy's project website: https://www.nepa.navy.mil/hctteis/
[5] The Navy further specifies in its CD: "While only the at-sea components of the range complexes are considered in the HCTT Draft EIS/OEIS, the potential effects of sound related to missiles, targets, or artillery projectiles fired from SNI on pinnipeds hauled out along the coastline are analyzed in the HCTT Draft EIS/OEIS for the purpose of the MMPA. All other land-based activities remain valid and continue to be covered by other NEPA documents and consultations. The Action Proponents did not re-analyze its activities on the land ranges in the California Study Area, with the exception of SNI land-based launches, because the [National Historic Preservation Act (NHPA)] compliance, incidental take statements, and biological opinions of non-jeopardy for land activities remain valid and would not be altered by the Proposed Action."

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Clemente Island Offshore Training and Testing Areas that fall within its bounds) with new sea space extensions and corresponding special use airspace; (2) the Point Mugu Sea Range (PMSR) (including activities associated with missile launches at San Nicolas Island and pierside activities at Port Hueneme); (3) the Northern California (NOCAL) Range Complex, and (4) four new amphibious approach lanes between mainland California and the NOCAL Range Complex and PMSR.

In general, the Navy indicates that the level of training and testing that would occur under the HCTT program is similar to that of past phases previously reviewed by the Commission[6], but with the expanded Study Area combining the SOCAL Range Complex, the PMSR, and offshore areas of the NOCAL Range Complex, the training and testing activities would be distributed across a much larger area. Certain activities will continue to be focused on specific ranges, but these areas will also provide contiguous sea and airspace for several range-spanning training and testing activities. The activities proposed for each range/activity area are summarized below and compared to the activities considered by the Commission in 2018 and 2020 for each area. Following those descriptions, updated information is provided about activities that occur in multiple ranges. More detailed descriptions of HCTT activities occurring within and across the range areas are also provided in Appendix A (Military Readiness Activities in the California Study Area) to the Navy's CD, included here as **Appendix C**, while **Exhibit 4** provides a more granular comparison between the proposed scope of the HCTT activities and prior phases of Navy training and testing. Broad descriptions of notable new activities proposed for the HCTT by range area are also included below.

Expanded Southern California (SOCAL) Range Complex

The Southern California (SOCAL) Range Complex is an offshore area situated between Dana Point and San Diego, extending more than 690 miles southwest into the Pacific Ocean (**Exhibit 1 and 3)**. The two primary components of the SOCAL Range Complex are the operating areas and the special use airspace. These components traditionally have encompassed 159,000 square miles (mi^2) of sea space; 150,000 mi^2 of special use airspace; the Silver Strand Training Complex; and over 56 mi^2 of land area on San Clemente Island (however, land activities are not part of the proposed activities) and the offshore training and testing areas adjacent to it. Most activities would occur in the eastern portion of the range complex, as they would be closer to established range infrastructure and facilities.

The Navy's CD states: "The SOCAL Range Complex includes instrumented underwater training ranges, mine training ranges, laser training ranges, and access to the seaside of Naval Base Point Loma. The Study Area also extends to the pierside locations at Naval Base Point Loma and Naval Base San Diego." **Exhibits 5** and **6** provide overviews of the more nearshore portions of the SOCAL Range Complex and Table 2-1

[6] The Navy CD refers to the HCTT as "Phase IV" of its California training and testing activities; Phase III is the combined program of activities previously considered in most recent CDs from 2018 for the SOCAL Range Complex in the HSTT (CD-0001-18) and from 2020 for PMSR (CD-0003-20).

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of the CD (**Appendix B**) provides descriptions of the types of activities associated with each of those designated areas.

Air and sea ranges associated with ongoing training and testing offshore of San Clemente Island (SCI) include the Shore Bombardment Area, two mine training ranges, two Training Areas and Ranges for underwater demolition, and the Southern California Anti-Submarine Warfare Range (SOAR) (**Exhibit 7**; see also **Appendix B**, Table 2-2). The CD also includes proposed updates to underwater infrastructure at SOAR for anti-submarine warfare training, and the installation of two new Shallow Water Training Ranges as extensions to the SOAR. The Navy proposes to refurbish and upgrade the existing SOAR underwater tracking and communication range[7], including installing new undersea cables integrated with hydrophones and underwater telephones, to support its undersea warfare training and testing within the SOAR.

The establishment of two new proposed Shallow Water Training Ranges (**Exhibit 8**) at Tanner Bank (514 mi^2) and SCI (171 mi^2) would involve installation of a new network of seafloor telecommunications cables, nodes, transducers and hydrophones, connected to the western side of SCI via existing bores. Per the Navy's CD, the expanded underwater instrumentation would "significantly enhance training effectiveness, increasing the use of these areas for [Anti-Submarine Warfare] training involving mid-frequency active sonar" and "support a seamless tracking interface from deep to shallow water, which is an essential element of effective [Anti-Submarine Warfare] training."

The Silver Strand Training Complex is also located within the boundaries of the SOCAL Range Complex (**Exhibit 6**) and is an integrated set of training areas located on and adjacent to the Silver Strand, a narrow, sandy isthmus separating the San Diego Bay from the Pacific Ocean. Those existing training areas on the seaside of the Silver Strand and in San Diego Bay (bayside) are described in more detail in Table 2-3 of the CD (**Appendix B**).

The CD also mentions that the expanded SOCAL Range Complex is proposed to include special use airspace Warning Areas[8] W-293 and W-294 (**Exhibit 9**) and the sea space beneath them. As seen in **Exhibit 3,** which shows the proposed range complex expansions, there are also two new sea space areas added to the California Study Area that connect to the existing SOCAL Range Complex: (1) areas along the Southern California coastline from approximately Dana Point to Port Hueneme; and (2) new testing sea space between warning area W-293 and PMSR.

Activities that would be new[9] to the SOCAL Range Complex include: new types of air, amphibious, anti-submarine, expeditionary, mine, and surface warfare activities[10]; at-

[7] Which has an 890 square mile instrumented area.
[8] As defined in the CD: "Warning areas: Areas of defined dimensions, extending from 3 NM [(3.45 mi)] outward from the coast of the United States, that serve to warn non-participating aircraft of potential danger (FAA Order 7400.2P, Chapter 24)."
[9] Where activities by ranges are indicated as "new", **Exhibit 4** and **Appendix C** of this report provide more detail of activities and the ranges they are proposed to occur in.
[10] These include use of mines, missiles, and other munitions.

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sea vessel refueling training; several types of uncrewed systems training and testing exercises (using uncrewed surface, underwater, and aerial, vehicles); undersea range system testing; and several types of research activities. Activities that would be new to the SSTC and other designated areas within the SOCAL Range Complex include ship-to-shore fuel transfer training[11] and mine warfare activities that include amphibious breaching operations and nearshore underwater mine countermeasure training. Also, combat swimmer/diver training and certification would be a new activity specific to the SSTC.

Underwater Infrastructure

In addition to the changes in activity levels discussed above, the HCTT program includes several underwater infrastructure projects in the SOCAL Range Complex, collectively referred to as "Proposed Modernization and Sustainment of Ranges" (Table A-8). These include the new installations at SOAR and the Shallow Water Training Ranges discussed above, and installation and maintenance of mine warfare and other training areas and underwater landing platforms to support underwater vehicle pilot proficiency training. Additionally, the Navy proposes to expand an existing submarine fiber-optic cable system offshore of San Clemente Island (**Exhibit 10**). The expansion would add approximately 600 kilometers of fiber-optic cable, likely in the form of up to three new cables attached to the existing trunk cable, and new connected instrumentation (e.g., communication units and sensors).

Point Mugu Sea Range (PMSR)

Point Mugu Sea Range (PMSR), is an approximately 36,000 mi^2 area of ocean and controlled airspace, roughly 230 mi long (north to south) and extending up to approximately 207 mi offshore of San Luis Obispo, Santa Barbara, Ventura and Los Angeles counties (**Exhibit 11**). The PMSR includes San Nicolas Island (SNI) and portions of the northern Channel Islands (Anacapa, Santa Barbara, Santa Cruz, Santa Rosa and San Miguel Islands) and is directly north of the SOCAL Range Complex. Ongoing activities in the PMSR include flight and vessel operations throughout the range, as well as directed energy (laser and high-powered microwave) activities, missile and target launch operations[12] originating from Naval Base Ventura County Point Mugu and San Nicolas Island, and other training and testing activities previously considered by the Commission in CD-0003-20.[13]

Sea space in the southwestern portion of PMSR has been designated to facilitate testing activities by the Office of Naval Research described in **Appendix C** of this report. Additionally, the PMSR currently supports the training and testing of extra-large uncrewed undersea vehicles and uncrewed surface vessels operating out of Naval

[11] Note: only sea water is used during this training
[12] The Navy's CD notes: "National Environmental Policy Act coverage of these land areas is included in the 2022 PMSR EIS/OEIS and the associated CD with the exception of the launches from SNI, which are included in the Proposed Action, as noted in Section 2.2.3 (California Study Area)."
[13] See Section IV.B below for more detail on previous Commission actions.

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Base Ventura County[14]; ongoing operations that are included in the current HCTT program CD. A variety of new activities at Naval Base Ventura County Port Hueneme[15], located in Ventura County, are also included in the Navy's CD, including pile driving activities as part of the Port Damage Repair training activity (at the pierside locations shown in **Exhibit 12**) as well as pierside sonar testing; in-port maintenance testing for vessel evaluation, and underwater search, deployment, and recovery using uncrewed systems.

Some activities occur in multiple range complexes, including ones that would be new to both the PMSR and NOCAL Range Complex (described separately below). These include various scales of anti-submarine warfare training exercises (which is notable since sonar has not been historically used in these areas under the Navy's previous CDs); amphibious warfare operations; new types of air, electronic, and surface warfare activities; small boat attack training; several new types of uncrewed systems training and testing exercises (using uncrewed surface, underwater, and aerial, vehicles); undersea range system testing; U.S. Coast Guard search and rescue training; and several types of research activities. Other activities that would be new to the PMSR but not proposed as new in the NORCAL Range Complex include: mine warfare, torpedo exercises and testing, submarine sonar maintenance and systems checks; and other specific types of research.

NOCAL Range Complex

The HCTT program includes an expansion of training and testing activities into the new proposed Northern California (NOCAL) Range Complex, which consists of two separate areas located southwest of Monterey Bay and northwest of San Francisco, respectively (**Exhibit 13**). The southern area includes approximately 13,000 mi^2 of airspace within Warning Area 283 (W283) and W285A/B/C/D. The northern area includes approximately 8,000 mi^2 of airspace within W260 and W513.[16] Both areas of the NOCAL Range Complex are located at least 12 NM (13.8 mi) from shore, outside the coastal zone. The Navy's CD notes the importance of the NOCAL Range Complex's proximity to Naval Air Station Lemoore, where the Navy's Pacific Fleet Strike Fighter squadrons are based, in supporting training, certifications, and testing. Activities that would be new to the NOCAL Range Complex (but not proposed as new in PMSR) include[17]: high-energy laser testing; high-powered microwave testing; uncrewed underwater vehicle training and testing; and other types of air and surface warfare

[14] The initial period of limited uncrewed vessel testing and training was reviewed by the Executive Director under ND-0022-24.
[15] The CD explains: "NBVC Port Hueneme provides port and docking facilities for PMSR support ships, target surface craft, the Navy's Self Defense Test Ship, Fleet units, Naval Facilities Engineering and Expeditionary Warfare Center test vessels, and Naval Sea Systems Command uncrewed surface and underwater vehicles using PMSR for testing and combat system qualification trials. NBVC Port Hueneme is also home to Naval Construction Group 1, the Seabees, who conduct important pre-deployment training in waterfront and in-water construction methods."
[16] Airspace in these warning areas extends from the ocean surface to at least 45,000 feet (ft.) altitude, and in the cases of W260, W283, and W513, to a ceiling of 60,000 ft.
[17] See above for activities that would be new to both the PMSR and NOCAL Range Complex. Several activities considered new to the NOCAL Range Complex are ongoing at PMSR.

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activities, including testing missiles, surface-to-surface gunnery, chaff, flares, and electronic systems.

Amphibious Lanes

The Navy also proposes four new amphibious approach lanes/corridors, providing land access from the NOCAL Range Complex and PMSR, offshore of Big Sur, Morro Bay, Pismo/Oceano Dunes, and Vandenberg Space Force Base (**Exhibit 14**). As described in the CD:

> Amphibious approach lanes are used by amphibious assault landing craft to approach and land on a beach to move personnel and equipment from ship to shore. Unlike the warning areas previously discussed, only vessel movement from sea to land would occur in the proposed amphibious approach lanes. In this CD, only the at-sea components of amphibious warfare activities utilizing the amphibious approach lanes (e.g., amphibious assault) are analyzed. The land areas associated with the lanes will be covered under separate environmental analyses and use agreements as planning for future activities matures

In correspondence dated May 6, 2025, the Navy stated that the amphibious lanes would be used for small boat operations, with no sonar or explosives use proposed.

Activities Occurring in Multiple Ranges

There are also many types of activities proposed as part of the HCTT that occur in multiple ranges. Based on the detailed activity descriptions provided by the Navy (Tables A-1 through A-8, **Appendix C**), the HCTT program would include a number of new training and testing activities as well as changes in the frequency and intensity of existing, ongoing activities. Activities that are considered new to the California Study Area as a whole, according to **Exhibit 4**, include: (1) a Naval Air Systems Command surface warfare testing activity called "Long-Range Weapons Delivery Systems (Over-the-Horizon)/Hypersonic Vehicle Test"; (2) a Naval Air Systems Command air warfare testing activity called "Large Force Test Event"; and (3) a Navy and U.S. Marine Corps training air warfare training activity called "Gunnery Exercise Air-to-Air Small Caliber." Within several major training and testing categories, notable changes include, but are not limited to:

- Changes to Navy and U.S. Marine Corps "integrated/coordinated training" (Table A-1):
  - New large-scale amphibious exercises, including use of explosives in the SOCAL Range Complex and Silver Strand Training Complex and use of shore-to-surface artillery and missiles, uncrewed surface vessels, uncrewed underwater vehicle, uncrewed aerial vehicles, torpedoes, gunnery, mobile mines, underwater mine countermeasures, submarine-launched missiles, laser targeting from ships, at-sea vessel refueling, multidomain uncrewed autonomous systems, port damage repair, underwater survey, and aerial firefighting;
  - Large increases (two-fold or greater) in certain activities involving coordinated anti-submarine warfare, missiles, torpedoes, maritime patrol

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aircraft, swimmer and divers, laser mine detection, mines (laying via submarine, neutralization with explosives, countermeasure/avoidance), uncrewed aerial systems, uncrewed underwater vehicle certification;
  - Overall decreases in major training exercises (despite expansions to PMSR and NOCAL), and in activities involving types of gunnery, helicopter-based anti-submarine warfare, airborne mine laying (nonexplosive), mine countermeasures/neutralization using remotely operated vehicles and helicopters, underwater demolition qualification and certification, some gunnery and missiles from helicopters, kilo dips/dipping sonar, and precision anchoring;
- New environmental analysis of previously unevaluated, ongoing "Coast Guard Training" activities (Table A-2);
- A general increase in "Naval Air Systems Command Testing" (Table A-3), including more than doubling tests proposed for air combat maneuvers, sonobuoys, flares, airborne mine neutralization with uncrewed underwater vehicles, air-to-surface bombing, air-to-surface high energy lasers, air-to-surface missiles;
- New "Naval Facilities Engineering and Expeditionary Warfare Center Training" (Table A-4) in the SOCAL Range Complex, including use of uncrewed systems and interaction with the seafloor;
- Changes to "Naval Sea Systems Command Testing" (Table A-5):
  - On average, decreases in tests for anti-submarine warfare missions, torpedoes radar and other electronic and communication systems, mine countermeasure missions, guns, vessel signature evaluations, and chemical-biological agent simulants;
  - Large increases in testing activities for uncrewed surface vessels, mine neutralization, uncrewed underwater vehicles, submarine weapons and sonar, missiles and rockets, and pierside sonar; and
  - New activities including acoustic and oceanographic research and equipment testing, underwater research and recovery, and up to one annual small ship shock trial (using underwater destinations);
- An overall increase in "Office of Naval Research Testing" (Table A-6), including acoustics research and uncrewed underwater vehicle testing; and
- For "Naval Information Warfare Systems Command Testing" (Table A-7), a significant decrease in testing for vehicles and underwater communications, but a fourfold increase in testing deployable autonomous undersea technologies, and entirely new acoustic, oceanographic, and energy research.

Among the numerous training and testing activities occurring in multiple ranges proposed under the HCTT program, several represent significant potential stressors to marine resources, including the use of mid-frequency sonar, military expended materials (including in-water explosives), and high-speed vessels. **Exhibit 15** (from Section H.1 of Appendix H of the Navy's 2024 HCTT Draft EIS/OEIS) provides descriptions of sonar systems, munitions, targets, and other systems employed in HCTT activities and includes diagrams and photographs of these project elements. The scope of these proposed activities, including changes from prior phases of Navy training and testing, are briefly summarized below.

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Sonar Use

The Navy estimates that the HCTT program will include some 4,112 to 7,570 total hours of hull-mounted mid-frequency sonar use per year, concentrated in the SOCAL Range Complex and predominantly consisting of MF1 "regular duty-cycle" sonar (**Table 1**, **Figure 1**).[18] The Navy also noted in correspondence with Commission staff that "hull-mounted surface ship sonar is acknowledged as the most powerful sonar with HCTT." Overall, the Navy's CD proposes a substantial increase in both the total number of hours of mid-frequency hull-mounted sonar use per year and the geographical area in which it would be used, extending sonar training and testing into the PMSR and NOCAL Range Complex for the first time (**Figure 2**).[19]. As stated in the Navy CD:

> Under the Proposed Action, the overall use of sonar and other transducers would increase from the 2018 HSTT EIS/OEIS for both training and testing activities for most sources. For regular duty cycle (MF1) hull-mounted sonar, the maximum year of training and testing activities includes greater than 20 percent more hours in the California Study Area compared to the prior analysis. For high duty cycle (MF1C) hull-mounted sonar, the maximum year of training and testing activities includes approximately 50 percent more hours in the California Study Area compared to the prior analysis.

Table 1: Approximation of HCTT Sonar Hours Across Range Areas

Sonar Bin	SOCAL (hr)	PMSR (hr)	NOCAL (hr)	Total (hr)
MF1	2,710 – 4,774	322 – 876	201 – 641	**3,233 – 6,291**
MF1C	432 – 737	55 – 145	30 – 96	**517 – 917**
MF1K[20]	362	0	0	**362**

[18] Supplemental information provided by the Navy, dated April 2, 2025 and May 8, 2025.
[19] However, the Navy confirmed in correspondence provided on May 8, 2025, that there would be no sonar used in the amphibious approach lanes or any other new nearshore areas.
[20] Hull-mounted anti-submarine sonars can also be used in an object detection mode known as "Kingfisher" mode (MFK1); MF1K would not be used in PMSR or NOCAL.

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Figure 1: Proposed Annual Mid-Frequency Sonar Hours by Range Area and Type

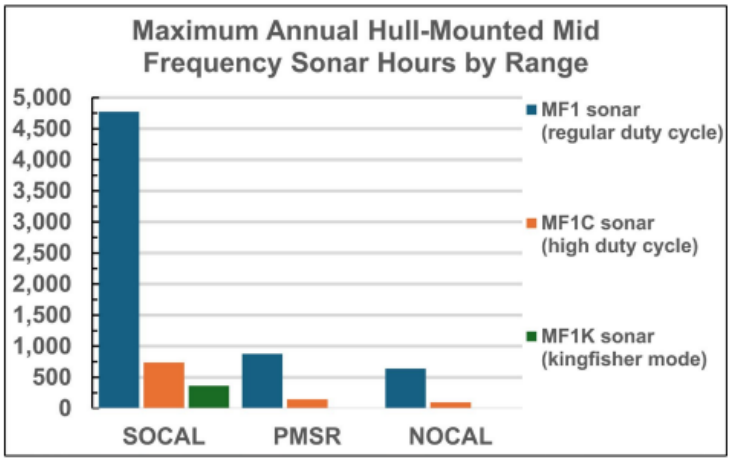
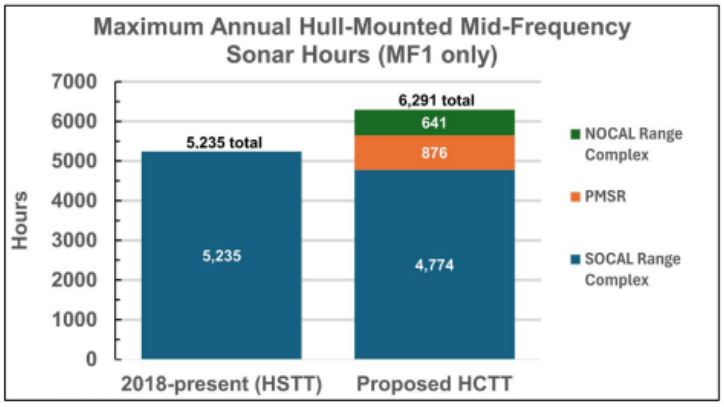


Figure 2: Comparison of Annual MF1 hours, current vs. proposed



Military Expended Materials and In-Water Explosives

As described in detail in the Navy's prior environmental assessments,[21] the military readiness activities included in the HCTT program involve the extensive use of large amounts of several types of military expended materials and explosives. While there are differences in the way the proposed use of materials is categorized and quantified in the HCTT versus prior programs, several broad observations can be made about the proposed use of military expendable materials in the HCTT in comparison to past testing and training programs:

[21] See Section 3.0 of each of the Navy's EIS/OEISs for previous/ongoing activities for the HSTT (2018) and PMSR (2022) and the HCTT DEIS/OEIS (2024).

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- Increase in the number of missiles, bombs, rockets, and gun ammunition (including small, medium, and large caliber projectiles) relative to current levels (as reflected in the 2018 HSTT and 2020 PMSR EIS/OEISs).
- Increase in the number of mine shapes, chaff, anchors, and decelerators/parachutes (particularly in the extra large/large/medium size categories) compared to current levels; and a decrease in the number of torpedoes, flares, canisters, and marine markers.[22]
- Approximately 40 nets are expected to be deployed (but recovered after the activity) annually which were not included in the prior programs.

The Navy's CD states that the use of in-water explosives would increase from the current level (based on the 2018 HSTT EIS/OEIS) for training activities and would decrease slightly for testing, with overall reductions in the use some of the larger explosives (e.g., 250 – 500 lbs, 500 – 650 lbs), but notable increases in the use of some of the smaller explosive types. The HCTT program also proposes new testing activities in the SOCAL Range Complex, specifically, small ship shock trials using large explosives (7,250–14,500 lbs.)), that were not previously included or evaluated under prior programs. The Navy states that "[m]ost activities involving in-water (including surface) explosives associated with large caliber naval gunfire, missiles, bombs, or other munitions are conducted more than 12 NM [(13.8 mi)] from shore" and that "Sinking Exercises are conducted greater than 50 NM [(57.5 mi)] from shore." Certain activities with explosives, including mine and expeditionary warfare activities, may be conducted close to shore at multiple locations.[23] In the SOCAL Range Complex, explosive activities could occur near San Clemente Island, in the SSTC, and in other designated mine training areas along the Southern California coast.

Standard Operating Procedures and Proposed Mitigation Areas

The Navy's CD also proposes a suite of standard operating procedures and mitigation measures as part of the HCTT program. Standard operating procedures are discussed as they apply by coastal resource policy and/or sensitive species throughout the CD and are outlined fully in Section 3.0.4 (Standard Operating Procedures) of the Navy's 2024 HCTT DEIS/OEIS.

The CD also provides a set of mitigation measures which fall into two general categories: (1) activity-based mitigation; and (2) geographic mitigation. These mitigation measures are discussed in more detail in the findings below by resource category and **Appendix D** of this staff report provides a full list and discussion of all proposed mitigation measures. Table C-14 in **Appendix D** of this report also provides a summary of changes to existing mitigation requirements from the ongoing HSTT and PMSR requirements, as well as new mitigation measures.

[22] Although the Navy noted in correspondence dated May 21, 2025, that mine shapes and torpedoes are not proposed to be expended (torpedoes are typically recovered immediately and mine shapes are periodically removed from the water for maintenance/cleaning).
[23] Locations for explosives testing and training activities are provided in Appendix A (Activity Descriptions) and Appendix H (Descriptions of Systems and Ranges) of the 2024 HCTT Draft EIS/OEIS.

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B. Previous Commission Actions

The Navy states in its CD that: "These military readiness activities are generally consistent with those analyzed in the HSTT[24] Final EIS/OEIS completed in October 2018 and the PMSR EIS/OEIS completed in January 2022 and are representative of the military readiness activities that the Action Proponents have been conducting in the HCTT Study Area for decades." The Commission has previously objected to four prior consistency determinations by the Navy over the past two decades for training and testing exercises in the Southern California (SOCAL) Range Complex (including most recently in 2018 through Consistency Determination No. CD-0001-18). However, the Commission has also concurred with certain past CDs that covered less extensive scopes of activities (e.g. for Point Mugu Sea Range activities in CD-0003-20). The proposed action in the new CD submittal combines training and testing programs off the coast of California that were previously considered separately into one new program and also proposes to expand them to include additional geographic areas, activity types and levels of activity that have not been previously considered by the Commission. Based on this, the currently proposed program exceeds the scope and scale of previous Navy training and testing programs.

On January 10, 2007, the Commission conditionally concurred with the Navy's consistency determination for offshore and onshore military training and testing exercises in SOCAL offshore waters for a two-year period (CD-086-06). The Commission's conditions focused primarily on the need for additional protection for marine mammals from Navy active sonar use, including increasing the size of safety zones (including a shutdown zone of at least 2 km) around the sonar source, avoiding sonar use within areas with high concentrations of marine mammals to the maximum extent feasible, and increasing protection (reduced sonar intensity) under low visibility and surface ducting conditions (surface ducting can result in amplification of sound levels or cause sounds to disperse farther than anticipated). Because the Navy did not agree to comply with most of the Commission's conditions, the Commission's action was treated as an objection under the federal consistency procedures. (15 C.F.R. § 930.4(b).) The Navy informed the Commission it intended to proceed without agreeing to most of the conditions, and in March 2007 the Commission filed a lawsuit in federal court, the outcome of which is described in the Commission's adopted findings in support of its decision of objection on the Navy's 2018 consistency determination (CD) for its HSTT program for the SOCAL Range Complex (CD-0001-18), available here[25].

Pages 14-16 of the adopted findings for CD-0001-18 summarize the Commission's previous actions on offshore and onshore military training and testing exercises in SOCAL offshore waters (including the de facto objections for CD-086-06 and CD-049-08, and objection for lack of information on CD-008-13), and related litigation.

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[24] Hawaii-Southern California Training and Testing
[25] The Commission's adopted findings in support of its decision on CD-0001-18 is available here: https://documents.coastal.ca.gov/assets/marine-acoustics/1%20CD-0001-18%20CD%20Navy%20HSTT%20Adopted%20Findings.pdf

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On October 15, 2008, the Commission conditionally concurred with a follow-up Navy consistency determination (CD-049-08) for the next round of Navy SOCAL training and testing exercises, covering the period from January 1, 2009, through December 31, 2013. The Commission adopted conditions similar to those in CD-086-06 (Exhibit 14, which contains both sets of Commission conditions). On January 16, 2009, the Navy again indicated its intent to proceed without agreeing to the conditions. By this time the U.S. Supreme Court had published its ruling in the case described above arising from the earlier training and testing program, and in this instance the Commission did not file a lawsuit.

On March 8, 2013, the Commission objected to the Navy's consistency determination for the following five-year period (CD-008-13). The Commission's objection to this consistency determination was based on lack of information:

> …because the Navy's analysis: (1) only looked at population-level effects; (2) arbitrarily limited its analysis to only 10 of the 32 coastal species present in the southern California study area; (3) did not include the type of population-level analysis Pacific Gas and Electric Company had provided in its high energy seismic survey consistency certification (CC-027-12); (4) provided no explanation as to why significant intensification of use of mid-frequency sonar was needed for military training and testing; and (5) failed to analyze and consider alternatives such as implementing "time-area" closures, as well as other mitigation measures previously adopted by the Commission or identified by Commission staff in its report on the present consistency determination.

The Navy provided additional information to staff following the Commission's objection. Nevertheless, the staff did not agree that the Navy had adequately addressed the concerns raised by the Commission in its objection. On December 17, 2013, the Navy informed the Commission that it intended to proceed despite the objection. In the meantime, litigation brought by other parties challenging the Navy's program proceeded (based on NEPA, MMPA, ESA claims) in Hawaii federal district court. In July 2014, the California Attorney General informed the Navy that the Commission intended to pursue its own litigation, and the parties entered into negotiations. On March 31, 2015, while those negotiations were ongoing, the Hawaii district court issued an order granting summary judgment to two of the plaintiffs in that case[26] ; however, subsequent to that, the parties entered into a settlement agreement. On May 15, 2016, the Commission and the Navy also agreed to a Settlement Agreement[27], under which the Commission agreed not to pursue litigation through the remainder of the 5-Year period (i.e., until late December 2018).

On June 6, 2018, the Commission objected to the Navy's CD for continuation of and modifications to ongoing Navy training and testing activities in the SOCAL Range Complex (CD-0001-18) based on lack of consistency with Section 30230 of the California Coastal Management Program (CCMP). The Navy provided additional

[26] Conservation Council for Hawaii et al. v. NMFS et al. and Natural Resources Defense Council et al. v. NMFS et al.
[27] See CD-0001-18 findings – Exhibit 11

information to staff following the Commission's objection, including identifying two new mitigation areas and avoidance of certain Marine Protected Areas. Nevertheless, the staff did not agree that the Navy had adequately addressed the concerns raised by the Commission in its objection.[28] On October 16, 2018, the Navy informed the Commission that it intended to proceed despite the objection.

On December 11, 2020, the Commission concurred with CD-0003-20 for the continuation and expansion of military readiness training and testing activities on the Point Mugu Sea Range and portions of San Nicolas Island, Naval Base Ventura County (NBVC) Point Mugu, and NBVC Port Hueneme. That concurrence was based on the limited scope of the project, several commitments provided by the Navy and the continued implementation of avoidance, minimization and mitigation measures. However, it is important to note that the scope of that CD did not include use of sonar or in-water explosives in the PMSR, as is proposed in CD-0003-25 for the new, expanded HCTT program. Additionally, the Executive Director concurred with a negative determination (ND-0022-24)[29] on September 27, 2024, for "Training and Testing of Extra Large Unmanned Undersea Vehicles and Unmanned Surface Vessels at Naval Base Ventura County", which included a short-term (through the end of 2025) program of in-water training and testing activities of the uncrewed vessels in the Pacific Ocean waters nearshore and offshore to the west of Naval Base Ventura County Port Hueneme.

C. Other Agency Approvals and Consultations

National Marine Fisheries Service (NMFS)

The Navy initiated formal consultation with the National Marine Fisheries Service (NMFS) under the Endangered Species Act in October 2024. The Navy also submitted a request for authorization to NMFS under the Marine Mammal Protection Act (MMPA) in September 2024, requesting seven-year Letters of Authorization (LOA) for Navy training, Navy testing, U.S. Coast Guard and Army exercises. [30] The Navy also initiated essential fish habitat consultation with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act, prepared a designated Essential Fish Habitat Assessment that analyzes potential adverse effects from the Proposed Action on Essential Fish Habitat, received conservation recommendations from NMFS in March 2025, and submitted a response in April 2025. NMFS review of all three is ongoing and will be completed prior to issuance of a final Record of Decision and implementation of the proposed project. The Navy expects to have a final Record of Decision of the MMPA by December 2025.

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[28] See Commission Staff status report dated August 30, 2018, on Navy Response to Commission Objection to Consistency Determination CD-0001-18 - Navy Southern California Testing and Training Program: https://documents.coastal.ca.gov/reports/2018/9/W12a/w12a-9-2018-report.pdf

[29] See letter in November 2024 Deputy Director's Report: https://documents.coastal.ca.gov/reports/2024/11/W9/W9-11-2024-report.pdf

[30] The Navy's 2024 LOA Application is available here: https://www.fisheries.noaa.gov/action/military-readiness-activities-hawaii-california-training-and-testing-hctt-study-area-2025

U.S. Fish and Wildlife Service (USFWS)

The Navy initiated informal consultation with the U.S. Fish and Wildlife Service under Section 7 of the ESA for listed species under USFWS' jurisdiction, and estimates completion of the informal consultation in June 2025.

State of Hawaii

The Navy submitted a consistency determination to the Hawaii Coastal Zone Management Program on April 1, 2025, for the portions of the training and testing located offshore of that state.

Tribal Governments

The Navy provided supplemental information to its CD related to tribal consultation on April 2, 2024, stating:

> The Navy submitted a Sacred Lands File (SLF) and Native American Contacts List request to the Native American Heritage Commission (NAHC) in order to identify tribes, tribal groups, or individuals that have an interest in the cultural resources within the CA [operating area], to include Mendocino through San Diego Counties. The NAHC responded to the Navy's request on October 16, 2023 with results of the SLF record search. The SLF included 39 federally recognized and 39 non-federally recognized tribes and tribal groups. In May 2024, the Navy invited all 39 federally recognized tribes to Government-to-Government Consultation. The Pechanga Band of Indians, Rincon Band of Luiseño Indians, Santa Ynez Band of Chumash Indians and San Pasqual Band of Diegueño Indians responded requesting consultation. The Navy held consultation meetings with the four tribes between June and September 2024. In addition, the HCTT EIS was discussed regularly at the ongoing monthly tribal meeting established to discuss projects at [San Clemente Island]. In October 2024, prior to DEIS public release, the four tribes were provided copies of Chapter 2 and the Cultural Resource Chapter for review and comment. Pechanga was the only tribe to submit comments. The Navy consulted with Pechanga and provided the tribe with a comment/response matrix that addressed all questions, comments and concerns, and their comments were addressed in the Cultural Resource chapter prior to DEIS release. The Navy provided all tribes identified in the SLF a 60-day DEIS review period from December 13-February 11, 2025; however, no tribes provided comments on the DEIS. In late February, the Navy followed up with the four tribes to ask if they had any additional comments. Santa Ynez was the only tribe to respond. They confirmed they had no additional comments. [..]

Commission staff also reached out to representatives from a list of Tribes provided by the NAHC to inform them of the Commission's federal consistency review process and timing and to invite further consultation. The results of this consultation are discussed below in the section on cultural resources.

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California Office of Historic Preservation

The Navy initiated a National Historic Preservation Act (NHPA) Section 106 consultation with the State Historic Preservation Officer for potential effects on historic properties resulting from the Proposed Action, and that process is ongoing.

NOAA Office of National Marine Sanctuaries

The Navy has prepared Sanctuary Resource Statements, in accordance with Section 304(d) of the National Marine Sanctuaries Act, that describe the potential effects of the Proposed Activity on resources found within the established National Marine Sanctuaries within the HCTT Study Area. The Navy submitted their draft to the NOAA Office of National Marine Sanctuaries at the end of March 2025 and that process is ongoing but estimated to be completed in August 2025.

D. MARINE RESOURCES

Section 30230 of the Coastal Act states:

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Overview

The Navy's consistency determination and supporting 2024 Draft Environmental Impact Statement /OEIS for the HCTT analyzed a number of marine resources that could be adversely affected by the Proposed Action, including sensitive marine areas and habitats (e.g., eelgrass and kelp), commercial and recreational fish stocks, and protected marine species (i.e., sea turtles, marine mammals, and abalone). Specifically, the proposed expansion of ranges, described in detail in Section IV.A above, will expose marine species to new stressors not present in these areas historically, such as high energy sonar, underwater explosives and use of uncrewed vessels with high speed capabilities. The proposed expansion of subsea infrastructure also has the potential to result in adverse impacts to marine resources.

The Navy's consistency determination and accompanying 2024 Draft Environmental Impact Statement describe the effects of both current levels and expanded operations on marine resources.[31] As discussed further below, these effects are most likely to be associated with the potential for: (1) death or injury of marine mammals from the use of sonar and explosives; (2) the release of contaminants and debris into marine waters; (3) collisions of Navy vessels with marine mammals (ship strikes); and (4) degradation of hard bottom habitat from the expansion of subsea infrastructure.

[31] For additional information on this analysis, please refer to the project's 2024 DEIS, available online: https://www.nepa.navy.mil/hctteis/

Types of Marine Species and Marine Resources

The Navy's CD lists 35 marine mammal species in the project area, including seven mysticetes (baleen whales), 21 odontocetes (dolphins and toothed whales), six pinnipeds (seals and sea lions), and the southern sea otter. The document further notes four species of sea turtles (green, loggerhead, olive ridley, and leatherback sea turtles) that may occur off Southern California and are listed as endangered under the Endangered Species Act.

The Navy's CD identifies the following sources of adverse impacts to marine mammals[32] and sea turtles associated with the proposed project:

- Acoustic (sonar and other transducers; air guns; pile driving; vessel noise; aircraft noise; and weapons noise)
- Explosive (explosions in-air; explosions in-water)
- Energy (in-water electromagnetic devices; high-energy lasers; high-power microwave devices)
- Physical disturbance and strikes (vessels and in-water devices; military expended materials (MEM);[33] seafloor devices; and pile driving)
- Entanglement (wires and cables; decelerators/parachutes)
- Ingestion (MEM – munitions; MEM other than munitions)
- Secondary (e.g., effects on habitat, effects on prey availability)

The Navy's CD also analyzes a similar set of stressors that could affect seabirds (including the endangered California least tern and the short-tailed albatross, and the threatened marbled murrelet), fishes, invertebrates (including black abalone, white abalone, and sunflower sea star). Potential impacts to sensitive habitats (including areas with kelp, seagrasses, and hard bottom communities) from explosives and physical disturbance and strikes are also analyzed.

Sonar Use

The Commission has been consistent for over two decades in expressing concerns over the effects of anthropogenic sounds on the marine environment, particularly on marine mammals. Anthropogenic noise is a recognized, but largely unregulated, form of ocean pollution that can deafen, disturb, injure, and kill marine life. Many species of marine mammals are known to be highly sensitive to sound and rely upon sound to navigate, find food, locate mates, avoid predators, and communicate with one another. A combination of noise sources, including shipping, oil and gas exploration and production, dredging, construction, and military activities, has resulted in dramatic increases in noise levels throughout the oceans. Over approximately the last fifteen years, a growing body of evidence has shown that some forms of ocean noise can kill, injure, and deafen whales and other marine mammals. In particular, a sequence of

[32] However, energy, entanglement, and ingestion stressors, are not listed for marine mammals in Section 3.2.3.2.6 of the CD, which explains that, for those stressors, a complete reanalysis under each alternative in the 2024 HCTT Draft EIS/OEIS was deemed unnecessary, based on the results of past analyses from the Navy and NMFS.

[33] See **Exhibit 15** and descriptions in Section IV.A – MEM includes explosive munitions, decelerators/parachutes, etc.

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marine mammal mass strandings and mortalities has been linked to exposure to high-energy mid-frequency[34] sonar. There is also evidence that some affected animals do not strand but die at sea. This has increased public concern about the effects of anthropogenic noise on marine mammals, which has been acknowledged in a variety of domestic and international forums.

Marine mammals rely on sound for vital life functions and have evolved specialized sensory capabilities to take advantage of the physics of sound in the ocean. Anthropogenic noise in the oceans has increased since the start of the industrial revolution and increases in ambient noise levels, as well as individual sound sources, can cause adverse effects, the extent and type of which are not well understood. Military technology and scientific research using low frequency active acoustics attempting to cover large distances have specifically targeted the ecological sound niches that low frequency specialist whales have evolved to rely on, necessarily competing with those marine mammal species. Peer-reviewed scientific literature indicates that marine mammals are affected by exposure to anthropogenic noise in a variety of ways that can be harmful or even lethal. However, there are significant gaps in information available to understand and manage these effects. This is particularly the case because marine mammals are extremely difficult to study and the marine environment is extraordinarily complex and dynamic. In addition, this is a relatively new field of concern and the amount of research undertaken to date has been limited in scope and duration.

In light of these concerns,[35] during its first two reviews of Navy SOCAL offshore testing and training (CD-049-08 and CD-086-06), the Commission adopted conditions intended to increase protection for marine mammals, seeking, among other things, larger preclusion areas around sonar sources, avoidance of sonar use within biologically sensitive areas, and lowering of maximum sound levels during times of low-visibility conditions. However, in both cases the Navy rejected the conditions adopted by the Commission, thus changing the Commission's conditional concurrence decisions to objections. In its two most recent reviews (in 2013 and 2018, see Section IV.B above for more details), the Commission has objected to the Navy offshore testing and training program in the SOCAL Range Complex. For CD-008-13, the objection was based on a lack of information about a variety of key details, including consideration and analysis of the feasibility of implementing the types of adverse impact avoidance measures identified above. For CD-0001-18, the objection was based on inconsistency with the policies of Chapter 3 of the CCMP. As described above, the Commission did concur with the Navy's CD for continuation and expansion of activities in the PMSR (CD-0003-

[34] From CD Appendix H:"Mid-frequency active sonar emits sounds at frequencies from 1 to 10 kHz. Mid-frequency active sonar is the Navy's primary tool for detecting and identifying submarines. Active sonar in this frequency range provides a valuable combination of range and target accuracy."
[35] As previously noted by the Commission in CD-008-13, and originally contained in the Commission's December 13, 2005, comments to the Marine Mammal Commission's Advisory Committee on Acoustic Impacts on Marine Mammals.

20), based on several commitments from the Navy, but notably, only a limited range of activities was proposed and no mid-frequency sonar use was included.

The Navy and the Commission have not historically agreed as to the adequacy of the preclusion zones the Navy has proposed around high-energy mid-frequency sonar sources, or the scope of activities to be conducted within areas of particular sensitivity (such as marine sanctuaries and areas of seasonal concentrations of marine mammals). In its past and current consistency determinations, the Navy has maintained that its suite of mitigation and monitoring measures are adequate to protect marine mammals (and other marine species). Although the Commission has consistently disagreed with it, the Navy's position has been that the lack of documented population-level effects, combined with the mitigation measures it has agreed to implement, support its conclusion that its activities are consistent with Section 30230 of the CCMP.

Marine Mammal Protection Act (MMPA)

The Navy has also historically cited its Marine Mammal Protection Act (MMPA) authorizations issued by the National Marine Fisheries Service (NMFS) as further evidence of a lack of adverse effects on marine resources from its programs. The MMPA sets forth the regulatory mechanisms for NMFS' authorizations of "takes" or "harassment" under that law. The Commission notes that the standard NMFS relies on under the MMPA differs from the CCMP's marine resource policies. NMFS must make the following determinations under the MMPA[36]: whether the "taking" will have a negligible impact on the species or stock(s); whether the "taking" will have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant); and whether the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takings are set forth.

NMFS defines ''negligible impact'' in 50 CFR 216.103 as ''an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.'' The MMPA was amended in 2004 to modify what constitutes a "take" or "harassment" in the context of "military readiness activities." Under the MMPA, for military readiness activities, the relevant definition of harassment is any act that: (i) injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (also referred to as "Level A harassment"); or (ii) disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered (also referred to as "Level B harassment") [16 U.S.C. § 1362(18)(B)(i) and (ii)].

While these standards are unique to the Marine Mammal Protection Act and not included in the Coastal Act or CCMP, they nevertheless provide a useful metric for describing and evaluating the anticipated effects of the proposed Navy training and testing program on the marine resources protected by the CCMP's enforceable policies,

[36] https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act

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including areas and species of special biological or economic significance. The Commission has long considered marine mammals and their habitats, National Marine Sanctuaries, state-designated marine protected areas, and sensitive habitats such as kelp forests, reefs and eelgrass beds to be areas and species of special biological or economic significance.

Impacts to Marine Mammal Species

The Navy's CD and supporting documents, particularly the Draft Environmental Impact Statement (DEIS), include a variety of tables and appendices that establish its position regarding potential impacts of its proposed training and testing activities on marine mammals. Several of these sources of information are described and excerpted below to summarize the Navy's analysis.

Table 3.7-5 of the 2024 DEIS (provided as **Exhibit 16**) summarizes the potential impacts of several types of acoustic stressors (including sonar and other sound transducers) to different groups of marine mammals (mysticetes, odontocetes, pinnipeds, and sea otter). This table shows that sonar and other transducers and impulsive noise from air guns, pile driving, and weapons may result in hearing loss, masking, physiological stress, or behavioral reactions, while vessel and aircraft noise are more limited to masking, physiological stress, or behavioral reactions. Section D.4 of Appendix D[37] (Acoustic and Explosive Impacts Supporting Information) to the 2024 DEIS describes general effects to the different types of marine mammals from exposure to acoustic sources, and discusses various effects categories in detail, with summaries of scientific research, for hearing, acoustic signaling, hearing loss and auditory injury, masking, behavioral reactions, physiological response, direct injury, and population consequences. Section 2.1.1 of Appendix E (Explosive and Acoustic Analysis Report) to the 2024 DEIS summarizes the differences in sensitivity to behavioral disturbance due to sonar by marine mammal groups, noting that beaked whales and harbor porpoise are the most sensitive:

- *Responses of beaked whales have been carefully studied on Navy ranges, including the Southern California Anti-Submarine Warfare Range (SOAR) west of San Clemente Island in the SOCAL Range Complex and the [Pacific Missile Range Facility] west of Kauai, Hawaii. Beaked whales exposed to sonar or other active acoustic sources may discontinue feeding dives and avoid the area during anti-submarine warfare activities […] (e.g., Henderson et al., 2015; Henderson et al., 2016; Jacobson et al., 2022; Manzano-Roth et al., 2016; Tyack et al., 2011). Population levels of beaked whales and other odontocetes on Navy fixed ranges that have been operating for decades appear to be stable. In areas where beaked whales are unlikely to regularly encounter naval sonar activity, beaked whales may be more likely to be displaced for longer periods of time (e.g., Stanistreet et al., 2022). Significant behavioral reactions to sonar are likely when beaked whales are exposed to anti-submarine sonar within a few tens of kilometers, especially for prolonged*

[37] Appendix D and Appendix E of the DEIS are both available at https://www.nepa.navy.mil/Current-Projects/At-Sea-Ranges/Hawaii-California-Training-and-Testing-EIS-OEIS/Draft-EIS-OEIS/

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periods (a few hours or more). Avoidance likely decreases the potential for hearing loss for these species.

- *Harbor porpoises are small odontocetes that are sensitive to anthropogenic activity and avoid anthropogenic sound sources at low received levels. Behavioral reactions are more likely than with most other odontocetes.*

The CD also summarizes the potential effects on marine mammals from sonar and other transducers, and the factors contributing to changes in the impacts analyzed for the proposed HCTT program compared to ongoing training and testing activities. As noted below, some of these changes are the result of modifications to the predictive model used to estimate the number and type of marine mammals that would be subjected to injury or disturbance from the proposed activities. As the scientific understanding of marine mammal hearing and response thresholds has improved over the years since the last training and testing program was evaluated, the predictive model has also been updated, in some cases demonstrating that prior model estimates were too low. The model has also been changed to no longer assume the effectiveness of the Navy's mitigation measures:

> Sonar and other transducers (hereinafter inclusively referred to as sonar) have the potential to affect marine mammals by causing auditory injuries, TTS [temporary threshold shift[38]], masking, non-injurious physiological responses (such as stress), or behavioral reactions. Low- (less than 1 kHz), mid- (1 to 10 kHz), and some high (10 to 100 kHz) frequency sonars are within the hearing range of all marine mammals. Additionally, all high- and very high-frequency (100 to 200 kHz) sonars are in the hearing range of all odontocetes (HF [high frequency[39]] and VLF [very low frequency[40]] hearing groups).
>
> Sonars with higher source levels, longer durations, higher duty cycles, and frequencies near the best range of hearing are more likely to affect hearing. Due to their high source levels and low transmission loss (compared to higher frequency sources), [anti-submarine warfare] sonar sources, including hull-mounted sonar (MF1) and high duty cycle hull-mounted sonar (MF1C), have large zones of effects.
>
> In general, the estimated number of predicted auditory effects have increased since the 2018 HSTT EIS/OEIS. While some increases may be attributable to changes in the Proposed Action and increase in action areas (e.g., inclusion of NOCAL Range Complex), many increases are due to changes in methodologies used to model effects that are listed in Section 3.7.3.1 (Mitigation Summary) of the 2024 HCTT Draft EIS/OEIS. Notably, the updated criteria for the HF cetacean auditory group, which includes delphinids and most other odontocetes, and the Phocid in Water (PCW) auditory group indicate increased susceptibility to auditory effects at low and mid-frequencies compared to the prior auditory criteria.

[38] Exposure to sound with sufficient duration and sound pressure level may result in a loss of hearing sensitivity, which is considered temporary threshold shift (TTS) if it eventually returns to normal.
[39] The high frequency (HF) cetacean auditory group includes delphinids and most other odontocetes
[40] The very low frequency (VLF) cetacean auditory group includes blue, fin, right, and bowhead whales

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> Consequently, predicted auditory effects due to most [anti-submarine warfare] sonars are substantially higher for these groups than in prior analyses of the same activities. The change in susceptibility to auditory effects due to sonars is less pronounced for other auditory groups. For most auditory groups, the revision to the avoidance model [assumes] that some marine mammals may avoid sound levels that can cause particularly certain high duty cycle sources. The revised avoidance method bases the initiation of an avoidance response on the behavioral response criteria. The ability to avoid a sonar exposure that may cause auditory effects in the model depends on a species' susceptibility to auditory effects, a species' sensitivity to behavioral disturbance, and characteristics of the sonar source, including duty cycle, source level, and frequency. Thus, predicted auditory effects for species that are less sensitive to disturbance compared to susceptibility to auditory effects have increased.
>
> Most [anti-submarine warfare] sonars are composed of individual sounds which are short, lasting up to a few seconds each. Systems typically operate with low-duty cycles (less frequent pulses with longer intervals between them) for most tactical sources, but some systems may operate nearly continuously or with higher duty cycles (more frequent pulses with shorter intervals between them). Some testing activities may also use sonars with high duty cycles. These higher duty cycle sources would pose a greater risk of masking than intermittent sources. Most [anti-submarine warfare] activities are geographically dispersed, have a limited duration, and intermittently use sonars with a narrow frequency band. These factors reduce the potential for significant or extended masking in marine mammals.
>
> The number of predicted behavioral effects has changed for all stocks since the prior analysis. These changes are primarily due to revisions to the behavioral response functions. The updated behavioral response functions predict greater sensitivity for the pinniped behavioral group and lower sensitivity for the odontocete and mysticete behavioral groups compared to the previous behavioral response functions. The new function for the sensitive species behavioral group predicts greater sensitivity at lower received levels for beaked whales and harbor porpoises. In addition, the cut-off conditions for predicting behavioral responses have been revised. These factors interact in complex ways that make comparing the predicted behavioral responses in this analysis to the prior analyses challenging.

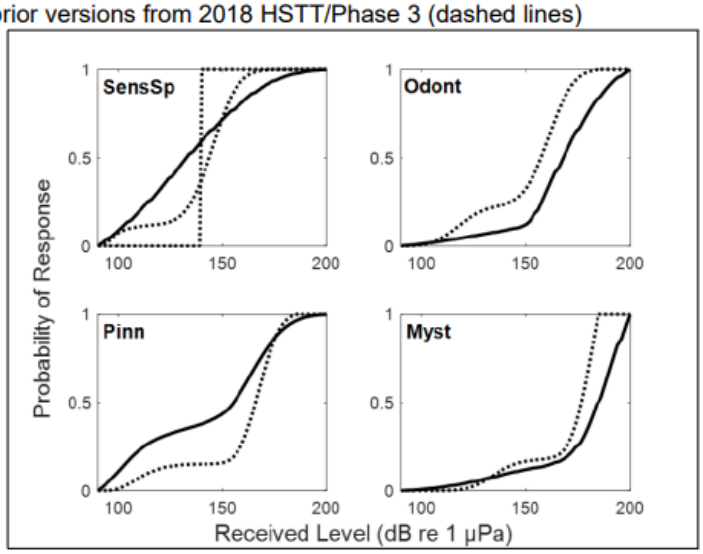
More extensive discussion of sonar impacts and the revised modeling and categorization for impacts can be found in 2024 DEIS Section 3.7 (Marine Mammals, in subsection 3.7.3.2.1) and its supporting materials. It is also important to note that, as discussed in the project description above (in Section IV.A), mid-frequency sonar hours are proposed to increase for the HCTT compared to current activities (including for high duty cycle MF1C hull-mounted sonar hours) and would be expanded to vast new geographical areas: the PMSR and the NOCAL Range Complex.

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Acoustic Modeling/Estimates of Harassments and Mortalities

Section 3.7.3.2 of the 2024 DEIS and Section 2.2 of Appendix E of the 2024 DEIS summarize the Navy's approach to estimating impacts on marine mammals from sonar and other active acoustic transducers[41]. The Navy divides impacts into MMPA Criteria for thresholds, which include mortality, "Level A" harassments, and "Level B" harassments. The Navy also divides marine mammals into four overall groups for purposes of its analysis - odontocetes, mysticetes, sensitive species (beaked whale and harbor porpoise), and pinnipeds, with differing behavioral response functions for each group, as shown in the graphs below in **Figure 3** (which are included as Figure 2.2-3 in Appendix E of the 2024 DEIS). As described above, the response functions were revised by the Navy since the Commission's review of the 2018 HSTT CD. For comparison, the earlier versions are included as dashed lines in the graphs. In general, the graphs show that for each group of species, as the sound level increases from right to left, the likelihood that the animal will be affected and respond also increases (from a zero percent chance at the bottom of the graph to a 100% chance at the top of the graph).

Figure 3[42]: Revised behavioral response functions for proposed HCTT/Phase 4 (solid lines) and prior versions from 2018 HSTT/Phase 3 (dashed lines)



[41] The Navy's acoustic model is described in detail in 2024 DEIS Technical Report "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase 4) (April 2025)", which can be found at https://www.nepa.navy.mil/Current-Projects/At-Sea-Ranges/Hawaii-California-Training-and-Testing-EIS-OEIS/Draft-EIS-OEIS/

[42] Note from Figure 2.3-3 of Appendix E to the 2024 DEIS: "Revised behavioral response functions (solid lines) and prior behavioral response functions (Phase 3, dotted lines). SensSp = Sensitive Species, Odont = Odontocetes, Pinn = Pinnipeds, Myst = Mysticetes. Both the Phase 3 beaked whale behavioral response function and the Phase 3 harbor porpoise step function are plotted against the new Sensitive Species curve."

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Using these data from its analysis quantifying impacts on marine mammals from acoustic and explosive sources, the Navy has provided several charts, in both its application (2024 LOA Application)[43] to NMFS for authorization under the MMPA and in Appendix E of its 2024 DEIS (**Exhibit 17**), quantifying marine mammals being "harassed" (predominantly due to behavioral, or Level B, harassment). Regarding these impacts, the Navy also states in its CD:

> Depending on the stock, effects on individuals may be permanent (auditory injuries) or temporary (TTS, masking, stress, or behavioral response). Behavioral patterns of some individuals, which may include communication, foraging, or breeding, are likely to be temporarily disrupted. Individuals or groups may avoid areas around sonar activities and be temporarily displaced from a preferred habitat. Displacement may be brief for short duration activities or extended for multi-day events and would depend on the behavioral sensitivity of the species. Sensitive species, particularly beaked whales, may avoid for farther distances and for longer durations. Most activities do not occur for extended multi-day periods and would occur over small areas relative to population ranges. The average rate of predicted effects on individuals in most populations would range from less than once per year to several times per year. Individuals of some behaviorally sensitive species or in populations concentrated near range complexes in the Pacific may have higher repeated effects. These effects are not expected to interfere with feeding, reproduction, or other biologically important functions such that the continued viability of the population would be threatened.

Also, the Navy maintains that its estimates of Level B harassment are overestimated; Chapter 7 of the Navy's 2024 LOA Application states:

> This request for [a Letter of Authorization (LOA) from NMFS] assumes that short-term non-injurious sound exposure levels predicted to cause onset-TTS or temporary behavioral disruptions (non-TTS) qualify as Level B harassment. Therefore, this analysis overestimates reactions qualifying as harassment under MMPA because there is no established scientific correlation between short-term use of sonars, explosives, pile driving/extraction, air guns, or missile and aerial target launches, and long-term abandonment or significant alteration of behavioral patterns in marine mammals.

In addition to estimating the behavioral changes and Level B take, the Navy generated estimates of more significant hearing loss and injury or mortality that could result from the proposed activities. Level A take includes injury and permanent auditory injury. **Table 2** (below) provides the Navy's model-based estimates of maximum annual and total seven-year "takes" of marine mammals – including potential mortalities, Level A takes, Level B takes -- from all acoustic and explosive sources over the full HCTT area (combined California and Hawaii activities), as presented in its 2024 LOA Application to NMFS.

[43] Navy's Letters of Authorization (LOA) Application for the MMPA, dated September 16, 2024, can be found at https://www.fisheries.noaa.gov/action/military-readiness-activities-hawaii-california-training-and-testing-hctt-study-area-2025

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Table 2: Summary of Annual and Seven-year Take Request from Acoustic and Explosive Sources for HCTT Military Readiness Activities[44]

MMPA Category	Source	Maximum Annual				7-Year Total			
		Navy Training	Navy Testing	USCG Training	Army Training	Navy Training	Navy Testing	USCG Training	Army Training
Mortality	Explosive	28	11	0	0	146	27	0	0
Level A	Acoustic & Explosive	4,070	2,233	9	40	23,913	12,104	22	203
Level B	Acoustic & Explosive	3,692,549	2,385,569	36,897	246	20,688,799	13,031,706	257,890	1,610

While the take estimates provided in this table include those occurring in the Hawaii Study Area, outside the Commission's purview, these totals nonetheless provide cumulative context for the full proposed HCTT program. For the Commission's purposes, the more relevant data are provided in the 2024 LOA Application Tables 5-2, 5-3, and 5-4 (**Exhibit 18)**, which separate California from Hawaii activity estimates.[45] By combining the modeled mortalities, Level A and Level B takes listed in the LOA Tables 5-2 (Navy and Marine Corps Training), 5-3 (Navy Testing), and 5-4 (Coast Guard Training) (i.e., by adding all Training and Testing activities together, and reducing the totals to exclude the Hawaii stocks), it is possible to estimate the maximum annual MMPA "takes" of marine mammals in California waters related to proposed HCTT acoustic and explosive sound sources. These species-specific impact estimates are provided in **Table 3**, below.

Table 3: Maximum Annual Species-Specific Take Requests from Modeling Estimates of Acoustic and Explosive Sound Source Effects for Combined Training and Testing Activities in CA Study Area

Species	HCTT Totals in CA Study Area		
	Level B	Level A	Mortality
Blue Whales	4,571	27	0
Fin Whales	13,501	55	0
Humpback Whales (Mainland Mexico - CA/OR/WA)	4,449	44	0
Humpback Whales (Central America/S Mexico - CA/OR/WA)	1,888	19	0
Minke Whales	2,993	32	0
Sei Whales	302	3	0
Gray Whales (Eastern N Pacific)	16,711	167	0
Gray Whales (Western N Pacific)	169	2	0
Sperm Whales (Physeteridae family)	3,891	3	0
Dwarf Sperm Whales	5,664	94	0
Pygmy Sperm Whales	5,615	107	0
Baird's Beaked Whales	10,174	0	0
Goose-Beaked Whale (formerly Cuvier's)	166,816	2	0

[44] Annual take estimates for acoustic and explosive sources are based on the maximum number of activities in a 12-month period.
[45] Additionally, Appendix E of the 2024 DEIS (Tables 2.4-82 to 2.4-98) provides California-specific data on potential marine mammal impacts separated into Significant Behavioral Response (BEH), TTS, AINJ, non-auditory injury (INJ), and mortality (**Exhibit 17**).

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Mesoplodont Beaked Whales	92,839	2	0
Bottlenose Dolphins (CA coastal)	1,350	7	0
Bottlenose Dolphins (CA/OR/WA offshore)	28,058	15	0
Killer Whale (Eastern N. Pacific)	1,023	4	0
Killer Whale (Eastern N Pacific & West Coast Transient)	55	0	0
Pygmy Killer Whale	795	0	0
Long-Beaked Common Dolphin	296,878	152	4
Northern Right Whale Dolphin	45,514	21	1
Pacific White-Sided Dolphin	69,210	42	2
Risso's Dolphin	43,833	21	0
Short-Beaked Common Dolphin	2,169,554	877	18
Short-Finned Pilot Whale	4,279	11	1
Striped Dolphin	133,399	44	1
Dall's Porpoise	59,619	1,237	0
Harbor Porpoise (San Francisco Russian River)	9,960	26	0
Harbor Porpoise (Northern California/ Southern Oregon)	481	0	0
Harbor Porpoise (Morro Bay)	4,373	88	0
Harbor Porpoise (Monterey Bay)	2,179	0	0
California Sea Lion	1,888,749	723	5
Guadalupe Fur Seal (Mexico stock CA/HI study area)	167,984	27	0
Northern Fur Seal (Eastern Pacific)	33,195	12	0
Northern Fur Seal (CA)	22,098	10	0
Harbor Seal	70,983	261	1
Northern Elephant Seal	118,474	111	0
TOTAL MAXIMUM ANNUAL	**5,518,506**	**4415**	**33**

Based on these data, the increased use of sonar and explosives under the proposed HCTT program has the potential to result in substantially greater impacts to marine mammals than the prior HSTT program (as calculated from tables in the exhibits to the Commission's adopted findings in support of its decision on the Navy's 2018 HSTT CD). This includes an approximately 115 percent increase in the total Level B take estimated over all species (from 2,556820, to 5,518,506) and an approximately 617 percent increase (from 616 to 4,415) in the total Level A take estimated over all species.

While the estimated annual Level B take would increase for most species, a number of species stocks would experience reductions in Level B take[46]; these reductions, however would be offset by increases in Level A take for the majority of those species stocks, indicating they would be subjected to a more severe and injurious effect. Species for which drastic increases (over 500 percent increase) in annual Level B take is anticipated include fin whales and eastern north Pacific killer whales. Extreme increases in annual Level B take (over 13-fold increases) are estimated for goose-beaked whales, Mesoplodont beaked whales, California sea lions, Guadalupe fur seals,

[46] These include: bottlenose dolphins, transient killer whales, northern right whale dolphin, Risso's dolphin, and striped dolphin.

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and harbor seals. All species for which Level A take was estimated for the 2018 HSTT have greater annual Level A take estimates under the currently proposed HCTT program, and several species for which no Level A take was expected previously now include Level A take estimates (sei whales, sperm whales of the Physeteridae family, goose-beaked whales, Mesoplodont beaked whales, CA coastal stock of bottlenose dolphins, eastern north Pacific killer whale, and Guadalupe fur seal). At least ten-fold increases in annual Level A take are expected for blue, fin, humpback, minke, gray, and short-finned pilot whales, striped dolphins, northern fur seals, and harbor seals.

Some of the changes between the proposed HCTT take numbers by species and those analyzed in the 2018 HSTT CD are the result of changes in methodologies used by the Navy to model auditory effects. However, as discussed above, it cannot be discounted that the proposed HCTT also represents a significant expansion in both space and time of proposed training and testing activities (as described above in Section IV.A), including an increase in proposed maximum annual mid-frequency sonar hours and an expansion of the use of that type of sonar into the PMSR and NOCAL Range Complex areas (which together encompass roughly 56,300 square miles of marine habitat). In fact, the HCTT includes take requests estimates for several stocks of harbor porpoise occurring in central and northern California waters that did not appear in the take estimates for the 2018 HSTT, which was centered on the SOCAL Range Complex. As one of the smallest of California's marine mammal species, harbor porpoise are known to be particularly sensitive to elevated levels of underwater sound and susceptible to adverse impacts from disturbance and displacement. It should also be noted that the take numbers presented above do account for other stressors besides sonar (which are discussed in sections below), but the bulk of those Level B and Level A harassment estimates are the result to sonar effects.

Further, when comparing the requested annual Level B take numbers to estimated stock abundances (see Table 3.7-2 from the 2024 DEIS, included here as **Exhibit 19**), the Level B take numbers represent over 100 percent of the stock abundance for the majority of the species stocks included[47] in the take requests for the California Study Area. Notably, for goose-beaked whales and Mesoplodont beaked whales, the Level B take estimates are over 3000 percent of the stock abundance estimates for the CA/OR/WA stocks of each of those species. In a statistical sense, this means that each individual animal from most of the species stocks evaluated could experience disturbance or harassment from sonar and/or explosives multiple times each year or a subset of the populations affected much more frequently.

Navy's Proposed Mitigation Measures

The Navy proposes a variety of mitigation measures intended to reduce impacts to marine mammals from sonar use, explosives and other sources of underwater sound, generally divided into two categories: (1) activity-based mitigation, and (2) geographic

[47] This is not the case for sei whales, gray whales, transient killer whales, northern CA/southern OR and Monterey Bay harbor porpoise stocks, eastern pacific northern fur seal stock, or northern elephant seals.

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mitigation. A complete list of the Navy's proposed mitigation measures is provided in **Appendix D** to this staff report.

The proposed activity-based mitigation (CD Section C.6, Tables C-2 to C-4)[48] includes specific measures to be implemented (as appropriate) in response to an applicable sighting of marine animals within or entering established mitigation zones for acoustic stressors (e.g., sonar, air guns, pile driving), explosives, and non-explosive practice munitions. Generally, if mitigation is triggered before a testing or training activity is to commence, the activity would be relocated or delayed, and if mitigation is triggered during an activity, the proponents would "(1) power down or shut down active acoustic transmissions, (2) cease air gun use, (3) cease pile driving or pile removal, (4) cease weapon firing or ordnance deployment, or (5) cease explosive detonations or fuse initiations" until all-clear conditions are met.

Proposed geographic mitigation areas (CD Section C.7) for physical habitats, marine species habitats, and cultural resources are summarized in Figure C-2 (provided here as **Exhibit 20**), and presented in greater detail in **Appendix D**. The Navy proposes three geographic mitigation areas in which a seasonal limit (from June 1 to October 31) of 300 hours of use of MF1 surface ship hull-mounted mid-frequency active sonar would be instituted collectively among the three areas on an annual basis. These areas, shown in **Exhibit 20**, include:

- The Northern California Large Whale Mitigation Area (Table C-8), extending north to south from Point Arena in Mendocino County to San Francisco Bay;
- The Central California Large Whale Mitigation Area (Table C-9), extending from Pigeon Point in San Mateo County to offshore of the Northern Channel Islands;
- The Southern California Blue Whale Mitigation Area (Table C-10), extending from La Jolla (San Diego) to the border with Mexico.

However, it is also important to note that while the new Northern and Central California mitigation areas would be subject to seasonal acoustic limits shared with the Southern area, use of mid-frequency sonar has not previously been authorized in these areas of the PMSR and NOCAL Range Complex. This means it would be a wholly new stressor for marine mammals in these areas, potentially resulting in a greater likelihood or greater severity of effects. Section IV.A, above, provides an estimate of where sonar would be used most frequently under the HCTT program.

The Southern California Blue Whale Mitigation Area also includes a seasonal prohibition (Jun 1 – Oct 31), on detonating in-water explosives during large-caliber gunnery, torpedo, bombing, and missile training and testing. While this area is in a similar location to the San Diego Arc mitigation area from the HSTT (CD-0001-18), it covers a smaller area, in part due to changes to the NMFS-designated Biologically Important Areas (BIAs), described below.

Additionally, the Navy proposes to implement several awareness measures intended to reduce the risk of harm to large whales during HCTT activities, including those involving

[48] See also the list of mitigation measures specific to marine mammals on CD p. 3-96 (in **Appendix B**)

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sonar, explosives and other acoustic stressors. The "California Large Whale Awareness Message Requirements" (Table C-11) include the broadcasting of alerts to personnel throughout the California Study Area of the possible presence of concentrations of large whales based on their seasonal patterns, including gray, fin, blue, and humpback, whales. The mitigation measure is a continuation of ongoing HSTT requirements, with an updated geographic extent. Within a more limited area, the proposed California Real-Time Notification Large Whale Mitigation Area (in a portion of the SOCAL Range Complex, as shown in **Exhibit 20**), real-time notifications would be issued to alert lookouts on vessels operating in the vicinity of large whale aggregations (defined as four or more whales of any species) sighted within 1 NM of an Action Proponent vessel, to inform their visual observations of applicable mitigation zones (see CD Table C-12). Additionally, the San Nicolas Island pinniped haulout mitigation areas (see zoomed in portion of **Exhibit 20**) would be subject to protective measures including altitude limits for missiles, scheduling to avoid peak pupping season, and implementing a video and acoustic monitoring plan (CD Table C-13).

Biologically Important Areas (BIAs)

To a large extent, the potential for adverse effects to marine mammals from acoustic and explosive stressors associated with the HCTT program depends on the overlap between the proposed activity areas and ocean areas used by marine mammals during their life-cycles, and on the strategic distribution of mitigation areas intended to protect the most crucial habitat areas. A key tool in determining the habitat areas in need of protection is the set of Biologically Important Areas (BIAs) established by NOAA based on available scientific data.

As the Commission found in Consistency Determination No. CD-0001-18 for the Navy's 2018-2025 HSTT program:

> The [Biologically Important Areas] designation was created to synthesize decades of scientific research, monitoring and marine mammal surveys and to serve as a tool for resource management agencies responsible for integrating the best available scientific understanding into decision making. Each Biologically Important Area (BIA) was established as a result of a four year long process involving scores of scientific experts and decades of research results and data on marine mammal biology, behavior, and spatial use trends. The BIA sites represent spatially explicit migratory corridors, feeding grounds, breeding aggregations, and critical habitats for small resident populations of marine mammals. The only sites that received the designation are those for which an overwhelming amount of data and scientific consensus is available. As noted in the report describing the BIA designation process and intent of the designation (Calambokidis et al, 2015): "The goal of identifying BIAs is to synthesize existing biological information in a transparent format that is easily accessible to scientists, managers, policymakers, and the public for use during the planning and design phase of anthropogenic activities for which U.S. statutes require the characterization and minimization of impacts on marine mammals."

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In Appendix K[49] (Geographic Mitigation Assessment) of the 2024 DEIS, the Navy explains:

> The BIAs located… off California (Calambokidis et al., 2024), have since been reviewed and revised based on new data and information collected since the original BIAs were defined based on how species use these areas. The original BIAs defined by Ferguson et al. ([2015]) and Van Parijs et al. (2015), and those recently revised (Calambokidis et al., 2024; Kratofil et al., 2023), are defined as biologically important for a particular species or stock and for an associated behavior exhibited by the species in that area. The four types of BIAs are reproductive, feeding, migratory, and small and resident… (Harrison et al., 2023).

The revised BIAs also designate "parent" and "core" areas for several species, reflecting data indicating that the full "parent" BIAs contained smaller sub-areas ("core areas") with intensified (e.g., high density) use by the given species. Notable revisions to the BIAs are briefly described below, with reference to the more detailed information provided by the Navy in Appendix K of the 2024 DEIS.

Blue whale BIAs for feeding (**Exhibit 21**) have recently been redefined based on new data (see Appendix K, pp. K-67 to K-70). The Navy summarizes the revised areas as follows:

> In 2015, feeding BIAs were delineated off the U.S. west coast for the Eastern North Pacific stock of blue whales (Calambokidis et al., [2015]). The BIAs were redefined for blue whale feeding behavior off the U.S. West Coast by Calambokidis et al. (2024) (Figure [K-19]) and incorporated tagging and additional line-transect survey data not previously considered (Calambokidis et al., [2015]). The parent BIA encompass 173,000 km^2 equivalent to 21 percent of the U.S. West Coast EEZ and include coastal, shelf beak, and offshore waters (Figure [K-19]). The core BIA, which is approximately 54,000 km^2, is 30 percent of the parent BIA but still larger than the previous blue whale feeding BIAs defined in 2015. The BIAs are in effect from June through November.

Entirely new BIAs were designated for fin whale feeding areas (**Exhibit 22**; Appendix K, pp. K-77 to K-82). The Navy summarizes the new identified areas as follows:

> During the first phase of BIA development, the best available science was not sufficient to define BIAs for fin whale behavior off California (Calambokidis et al., [2015]). A combination of sightings, satellite tagging data, and habitat-based distribution models has since enabled researchers to define fin whale feeding BIAs along the west coast (Calambokidis et al., 2024) (Figure [K-22]). The parent BIA encompasses approximately 315,000 km^2 and 38 percent of the U.S. West Coast EEZ and is the largest BIA designated off the West Coast. The core BIA is 49 percent of the parent BIA (approximately 155,000 km^2) (Calambokidis et al., 2024). The BIAs are in effect from June through November.

[49] Appendix K of the 2024 DEIS is available at https://www.nepa.navy.mil/Current-Projects/At-Sea-Ranges/Hawaii-California-Training-and-Testing-EIS-OEIS/Draft-EIS-OEIS/

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Revised BIAs were also designated for humpback whale feeding areas (**Exhibit 23**; Appendix K pp. K-82 to K-87). The Navy summarizes revised areas as follows:

> Two BIAs (parent and core) for humpback whale feeding behavior have been identified in the California Study Area (Figure [K-23]). The parent BIA encompasses approximately 140,000 km^2 equivalent to 20% of the area of the U.S. West Coast EEZ, and the core BIA encompasses approximately 38,000 km^2 (Calambokidis et al., 2024). The BIAs are only in effect from March through November when foraging humpback whales are expected to be present. The core BIA is 27% of the parent BIA but is still a little over 50% larger than the previous Humpback Whale feeding BIAs defined in 2015.

Finally, several other new BIAs have been designated off the coast of California, including:

- Gray Whale BIAs for migration and reproduction (Appendix K pp. K-71 to K-77 and **Exhibit 24**;
- Harbor Porpoise BIAs for small and resident populations near Monterey Bay and Morro Bay (Appendix K pp. K-87 to K-90 and **Exhibit 25**); and
- Killer Whale BIAs for small and resident populations (Appendix K pp. K-71 to K-77 and **Exhibit 26**).

Appendix K of the 2024 DEIS also provides a general description of how the Navy considered the revised BIAs in determining the extent of its new proposed geographic mitigation areas for the HCTT:

> For this assessment, the Action Proponents used the revisions to the Cetacean Density and Distribution Mapping Working Group source literature (Calambokidis et al., 2024; Kratofil et al., 2023) in combination with Navy marine species monitoring reports, available tagging data, and the most up-to-date scientific literature, to assess the potential likelihood that additional mitigation in these areas would be warranted. In many instances, data from the Navy's marine mammal tagging studies were particularly helpful in providing context about the full extent of habitats used by cetaceans for biologically important behaviors in the Study Area, since oftentimes the biologically important areas identified in Calambokidis et al. (2024) and Kratofil et al. (2023) represent only a portion of the habitats used by marine mammals throughout their range.

However, as shown in **Exhibit 31**, the Navy's proposed whale mitigation areas cover only a fraction of the revised core BIAs designated by NMFS. Given that these core BIAs represent the ocean areas of most intense use (and greatest habitat value) by these whale species, it is questionable whether the relatively small mitigation areas for whales would provide adequate protection from acoustic, explosive and other stressors. A map overlaying the "Core" BIA areas for blue, fin, and humpback whales, along with BIAs for gray whales, harbor porpoise, and killer whales, is provided as **Exhibit 27**[50]. Notably, the Navy's proposed geographic mitigation areas for the new HCTT provide

[50] Originally Figure K-2 of Appendix K of the 2024 DEIS

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significantly less extensive coverage of these new, larger BIAs, than the mitigation areas included in CD-0001-18 did for the older BIAs.

Beaked Whales

The Commission's adopted findings from its review of the Navy's 2018-2025 HSTT program (CD-0001-18, available here) discussed the Navy's considerations regarding goose-beaked[51] whales for habitats for potential BIA consideration, population trends, and recent studies, on pages 34-36. An update on population trends discussed for goose-beaked whales is provided below in the "Commission Analysis" section on "Population-Level Effects". Section D.4.5.2.1.1 of Appendix D to the 2024 DEIS provides a science update on behavioral reactions of beaked whales to sonar and other transducers. In that section, the Navy cites research by Falcone et al. (2017) on the impacts of different types of sonar on dive durations and intervals for goose-beaked whales in the Southern California Anti-Submarine Warfare Range. The Navy explains how that study found that "responses to the mid-power mid-frequency active sonar at closer ranges were comparable to the responses to the higher source level ship sonar" and that "helicopter dipping sonars are shorter duration and randomly located, so more difficult for beaked whales to predict or track and therefore potentially more likely to cause a response, especially when they occur at closer distances (6–25 km in this study)". Despite this evidence of the potential for adverse effects on beaked whales, the Navy does not propose any geographic-mitigation for dipping sonar (a type of mid-power mid-frequency active sonar deployed from helicopters) in the California portion of the HCTT study area. Section C.6.3.25 of Appendix C to the 2024 DEIS provides the Navy's review of current scientific literature on goose-beaked whales regarding the status and management, habitat and geographic range, and population trends and threats, for the species in the HCTT action areas, including the California/Oregon/ Washington stock.

In the 2024 BIA revisions, Calambokidis et al. (2024) noted for goose-beaked whales:

> No watch list areas were formally designated for the West Coast region in this assessment, but we initially considered developing a BIA for [goose-beaked] whales. Accurate information on the distribution and abundance of this species has been limited due to their cryptic nature and occurrence primarily in deep offshore waters making it hard to define its habitat preference across the entire region. This species has been documented as sensitive to anthropogenic disturbance, in particular Navy Sonar (e.g. DeRuiter et al., 2013; Falcone et al., 2017). Recently, however, additional information and approaches are providing a better picture of this species off the U.S. West Coast (Curtis et al., 2021; Barlow et al., 2021a; 2021b, Schorr et al., 2014; Bernaldo de Quirós et al., 2019). […] While the species is broadly distributed along the U.S. West Coast, there is increasing evidence using satellite telemetry suggesting there may be small discrete populations which have high site fidelity over long time periods (e.g. Schorr et al., 2014; 2022a; 2022b). In addition, the development of mark-recapture abundance models for this species in the San Nicolas Basin in Southern California has provided abundance

[51] Formerly "Cuvier's beaked".

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> and preliminary trend data for this region, indicating a localized population estimated at 121 (71-219) individuals (Curtis et al., 2021) with individual sighting histories spanning as long as 15 years (Schorr et al., 2022a). The combination of high site fidelity, mark-recapture studies, and acoustic monitoring indicate some areas, including the San Nicolas Basin appear to have higher densities of beaked whales (Falcone et al., 2009; Barlow et al., 2021a, 2021b; Curtis et al., 2021) and may warrant future consideration as a BIA.

The Navy's CD does not propose any geographic mitigation areas in the San Nicolas basin or specific to beaked whales. In fact, the Submarine Warfare Range (SOAR) is located in that basin, flanked by the two newly proposed Shallow Water Training Ranges. While no new BIA is currently included for the localized population of goose-beaked whales in the San Nicolas Basin mentioned above, it is worth noting that the San Nicholas Island Mitigation Area and Santa Barbara Island Mitigation Area (which were previously established by the Navy for the 2018 – 2025 HSTT program) could potentially serve as refuges for species in the San Nicolas Basin if they were continued to be included as geographic mitigation areas. However, it should also be noted that the Navy's CD does indicate that it has spent a "total of $20.3M on marine species monitoring within HCTT over the seven-year period from 2018 through 2024" which "supported field surveys in California and Hawaii, data analysis, and final reporting". The Navy lists 36 specific projects[52] that are "currently either starting or ongoing within the California Study Area from 2018 through 2024", including six that mention beaked whales. While many questions remain about the behavioral responses of beaked whales to mid-frequency sonar activities in the coastal waters off California, the Navy has continued to make an effort to fund research to better understand these potential impacts.

Explosives Use and Expendable Materials

As discussed in more detail above in Section IV.A for "Activities Spanning Ranges," the HCTT program includes the use of many types of in-water explosives and other military expended materials, and proposes to increase the numbers of missiles, bombs, rockets, and gun ammunition used in comparison to previous training and testing programs. **Table 4** (2024 DEIS Table 3.0-10) summarizes the quantities of explosive sources (listed in ascending order by explosive weight) that "could be used" underwater or at the surface during training and testing activities, on an annual basis, throughout the full HCTT Study Area (California and Hawaii.

[52] Listed on pages 3-101 to 3-103 of the CD

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Table 4: Explosive Sources Quantitatively Analyzed that Could be Used Underwater or at the Surface

Bin	Net Explosive Weight	Example Explosive Source	Annual Training	Annual Testing
E1	0.1–0.25	Medium-caliber projectile	1,750–4,303	7,305–7,430
E2	> 0.25–0.5		2,950–3,000	-
E3	> 0.5–2.5	2.75-in. rocket	5,588–5,870	4,744–6,568
E4	> 2.5–5	Mine neutralization charge	179–190	1,324–2,624
E5	> 5–10	5 in. projectile	5,059–5,984	2,024–2,676
E6	> 10–20	Hellfire missile	2,293–2,357	144–148
E7	> 20–60	Demo block/shaped charge	115–190	549–622
E8	> 60–100	Lightweight torpedo	3–5	213–234
E9	> 100–250	500 lb. bomb	386–408	111–115
E10	> 250–500	Harpoon missile	89	13
E11	> 500–675	650 lb. mine	7–11	1–2
E12	> 675–1,000	2,000 lb. bomb	17–19	-
E13	> 1,000–1,740	Underwater demolitions – large area clearance	6	-
E16	10,000	Ship shock detonation	-	0–3

Notes: > = greater than; in. = inch; lb. = pound

These types of explosive sources have the potential to adversely affect marine mammals and wildlife through direct and acoustic injury if animals are in proximity to associated explosions. Direct injury would occur to marine mammals located within an explosive blast radius or exposed to sound, materials or fragments ejected from an explosion. Exposure to explosive energy waves underwater are particularly likely to result in injury to air- or gas-filled organs such as lungs and digestive organs. Acoustic injury could result in temporary or permanent loss of hearing ability, either of which would be significant for marine mammals that rely on sound and hearing to communicate and maintain social cohesion, find food, avoid predators, reproduce and care for young.

In Table 3.7-14 of the DEIS, the Navy summarizes potential effects of explosives on marine mammals as follows:

> Explosives may result in mortality and non-auditory injury. Direct injury due to explosives depends on the charge size, the geometry of the exposure (e.g., distance and depth), and the size of the animal. The intermittent nature of most impulsive sounds would result in very limited probability of any masking effects. Due to the rapid rise time and higher instantaneous peak pressure of impulsive noise, nearby noise is more likely to cause startle or avoidance responses. Few studies on reactions to explosives exist, but responses to seismic surveys, pile driving and other impulsive noises have been recorded. Different groups of marine

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mammals may respond in different ways to impulsive noise, as summarized in Table 3.7-5.[53]

Table 2, presented above in the Sonar Use section, includes the Navy's full HCTT take estimates and Tables 2.4-92 to 2.4-98 of Appendix E of the DEIS (shown in **Exhibit 17**), provide estimated effects to marine mammal stocks from explosives, specifically, by impact type. While sonar impacts make up the vast majority of estimated marine mammal take (**Table 3**[54], above), it is clear from the explosives-specific tables in **Exhibit 17** and in **Table 2**, that explosives would also result in modest levels of take, including estimated annual mortalities. As described above in the discussion of proposed mitigation measures for sonar use, the Southern California Blue Whale Mitigation Area (Table C-10, see **Appendix D**) includes a seasonal prohibition (Jun 1 – Oct 31) on detonating in-water explosives during large-caliber gunnery, torpedo, bombing, and missile training and testing. However, the Northern and Central Large Whale Mitigation areas do not include these seasonal explosives prohibitions in the coastal waters of the PMSR and NOCAL Range Complex – both ranges where the use of in-water explosives has not previously been authorized.

The Navy's CD also analyzes the potential impacts of explosives on other marine resources including sensitive seafloor habitats. The Navy proposes to implement mitigation to avoid impacts on seafloor resources from explosives and physical disturbance and strikes from military expended materials and anchorages in mitigation areas throughout the California Study Area, as described in detail in Table C-7 for artificial reef, hard bottom substrate, and shipwreck mitigation areas on page C-22 of Appendix C of the CD (see **Appendix D**). These measures include maintaining a 350 yard (radius) buffer[55] when using explosives, to avoid damage from vibrations and avoid expendable material being deposited on sensitive seafloor resources. The proposed seafloor mitigation areas are depicted in **Exhibit 20**. Hard bottom habitats in the SOCAL Range Complex and for a zoomed in area covering SOAR and the two proposed Submarine Warfare Training Ranges (which are described in Section IV.A) are depicted in **Exhibit 28**, which was provided by the Navy in correspondence dated May 6, 2025.

Marine Debris

As part of the proposed project, discussed above in Section IV.A, the Navy would also intentionally and accidentally release other materials into the marine environment, including target-related materials, chaff, flares, and decelerators/parachutes. In its analyses of potential impacts to marine mammals, sea turtles, fish, and invertebrates, in the CD, the Navy notes that "[d]uring activities that involve recoverable targets (e.g., aerial drones), the Action Proponents recover the target and any associated decelerators/parachutes to the maximum extent practicable consistent with personnel and equipment safety" and "[r]ecovery of these items helps minimize the amount of remaining materials." The CD emphasizes, for the various species analyzed, that these

[53] Table 3.7-5 is included as **Exhibit 16** to this report.
[54] Based on the Tables 5-2 through 5-4 in the 2024 LOA Application for maximum annual "Species-Specific Take Requests from Modeling Estimates of Acoustic and Explosive Sound Source Effects"
[55] Except in designated operating areas, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practical.

standard operating procedures "[reduce] the potential for physical disturbance and strike, ingestion, and entanglement of applicable targets and any associated decelerators/parachutes."

The Commission's adopted findings in support of its decision on the Navy's Point Mugu Sea Range (PMSR) consistency determination (No. CD-0003-20) included a summary of the Navy's efforts over the past decade to collect and remove marine debris (including several beach cleanup efforts) from the Sea Range, and described new efforts at that time that the Navy was initiating on San Nicolas Island (annual cleanups, debris characterization study and inclusion of marine debris in the island's Integrated Natural Resources Management Plan). The Navy also provided an update in correspondence dated May 21, 2025, for recent and ongoing marine debris cleanup efforts in southern California, including: (1) three annual marine debris characterization and removal events as part of a study at San Clemente Island from November 2022 through March 2024; (2) semi-annual marine debris removal at Naval Base Coronado and Silver Strand Training Complex; (3) trash collection at the mouth of Chollas Creek in San Diego up to twice a year; (4) multiple marine debris removal events per year at Seal Beach; (5) beach clean-ups at Marine Corps Base Camp Pendleton; and (6) over seven debris removals in the PMSR area, conducted between November 2014 and October 2024, including removal of 10,758 pounds of marine debris from the shoreline of San Nicolas Island and other marine debris efforts at naval Base Ventura County.

The continuation of these marine debris removal efforts would offset expended materials that are discharged into the marine environment and cannot be immediately recovered and help provide for an overall reduction in marine debris within the California Study Area of the HCTT and surrounding areas.

Potential for Vessel Strikes

Collisions with large vessels ("ship strikes") have been recognized as the leading cause of death for blue and fin whales, and the second highest source of mortality for humpback whales, off of the U.S. West Coast (Carretta et al 2015; Rockwood et al 2017). All three species are recognized as Endangered under the federal Endangered Species Act. Along with gray whales, these are four of the most common whale species found off of the California coast and within the several proposed HCTT ranges. The proposed HCTT program would include the frequent use of a wide variety of naval vessels, at times operated at high speeds, over broad ocean areas overlapping the BIAs for large whale species that are known to support their highest densities and frequencies, and thus would necessarily involve the risk of vessel strikes.

The Navy analyzes the potential for vessel strikes to marine mammals in Section 3.7 (Marine Mammals) of the 2024 DEIS, with the following summary in Table 3.7-18 of that section:

> Vessel strikes may adversely affect marine mammal species, particularly large whales, but mitigation measures are in place which should reduce the potential for a strike to occur.

- Vessel strikes from commercial, recreational, and military vessels are known to have resulted in serious injury and occasional fatalities to cetaceans. Most military readiness activities under all alternatives involve some level of vessel activity.
- An examination of vessel traffic within the Study Area determined that military vessel occurrence is approximately 4 percent of total vessel traffic in the Study Area.
- Standard operating procedures for vessel safety will benefit marine mammals through a reduction in the potential for vessel strike, as well as additional mitigation measures.

Table C-5 (CD Section C.6.2, in **Appendix D** of this report) describes Activity-based mitigations for vessels, vehicles, towed in-water devices, and net deployment. These mitigations include the use of lookouts to monitor for marine mammals and sea turtles. Use of lookouts/observers is a widely accepted measure for reducing (though not eliminating) the risk of vessel strikes. However, as discussed below, the effectiveness of observers has been shown to be dependent on their training and experience, as well as physical factors such as sea-state and visibility. The implementation of these mitigation measures and standard operating procedures, including the use of lookouts, is expected to help reduce ship strike risks. However, recent evidence indicates their efficacy may be limited.

In its 2024 application to the National Marine Fisheries Service for authorization under the Marine Mammal Protection Act, the Navy states that "[i]n the seven-year period between 2017 and 2023 within the HCTT Study Area, there were three large whales struck by Navy surface ships", all in Southern California (two in 2021 and one in 2023). For the Coast Guard, the Navy explains that while "[t]here were zero strikes within the California portion of the HCTT Study Area", "[t]here were two Coast Guard strikes outside of and inshore of the California portion of the HCTT Study Area, a humpback whale in 2023 and a gray whale in 2024."

As the Commission found in its 2020 review of Navy activities within the Point Mugu Sea Range (CD-0003-20[56]), "the use of slow vessel speeds – particularly those at or below 10 knots – would be expected to provide some of the greatest benefits in terms of reducing ship strike risks." This vessel speed reduction approach is well supported by scientific research which has found that the probability of a lethal strike increases with vessel speed (Conn and Silber, 2013; Vanderlaan and Taggart, 2007) and that slower speeds may allow whales and vessel operators more time to engage in avoidance behavior (Gende et al., 2019; Vanderlaan and Taggart, 2007). In support of these findings, it is notable that the two vessel strike events involving U.S. Coast Guard vessels offshore of California in 2023 and 2024 were further described by the Navy as vessels "moving at slow speed less than six knots and no obvious injury to the whales were observed after the strikes." While the Navy has rejected inclusion of vessel speed reductions as a mitigation measure, as discussed further below, it would doubtless be

[56] The staff report for CD-0003-20 is available at https://documents.coastal.ca.gov/reports/2020/12/F13b/F13b-12-2020-report.pdf (with addendum at https://documents.coastal.ca.gov/reports/2020/12/F13b/F13b-12-2020-addenda.pdf)

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an effective means of reducing ship strike risks and has been widely adopted as a voluntary measure by much of the commercial shipping industry offshore of California and has provided the additional benefits of reducing air pollution emissions and underwater engine noise.[57]

Given that the HCTT program proposes significant increases in the use of uncrewed vessels, it is also worth noting the additional ship strike risks posed by these vessels and uncertainty about how application of mitigation measures developed for crewed vessels would be accomplished. As noted in the 2024 DEIS, in Table 3.0-16[58], speeds for these uncrewed vessels can be quite high - exceeding 50 knots - and they can be up to 300 feet long. While smaller than container ships, which can reach 1,300 feet long, these Navy vessels would still pose a significant injury or mortality risk to a whale in the event of a collision. In some cases, the Navy has acknowledged that these vessels would be assigned lookouts stationed on supporting vessels, it has also explained that this would not be the case for all activities. In its 2024 application to NMFS for authorization of the proposed HCTT program under the Marine Mammal Protection Act for the period covering December 2025 through December 2032, the Navy "is requesting five (5) large whale strikes" and the Coast Guard "is requesting four (4) large whale strikes". The Navy's calculations in support of this application did include analysis of uncrewed surface vessels.

Installation of New Seafloor Infrastructure

As described above in the Project Description section of this report, the proposed project includes installation of new seafloor infrastructure (including cables and sensors) at the Southern California Anti-Submarine Warfare Range (SOAR) and the two proposed Shallow Water Training Ranges, as well as infrastructure upgrades at mine warfare and other training areas, and new underwater landing platforms (**Exhibits 5-8**). The proposed new San Clemente Shallow Water Training Range includes areas within the State's Coastal Zone. Additionally, an expansion of a submarine fiber-optic cable system offshore of San Clemente Island (**Exhibit 15**) with new connected instrumentation (e.g., communication units and sensors) is proposed. As described above, in the "Explosives Use and Expendable Materials" section, the Navy's CD includes mitigation measures to avoid impacts on seafloor resources from physical disturbance to artificial reef, hard bottom substrate, and shipwreck mitigation areas with a 350-yard buffer (Table C-7 on page C-22 of Appendix C of the CD - see **Appendix D**). **Exhibit 20** shows the proposed seafloor mitigation areas and **Exhibit 28** shows a survey of hard bottom habitats in the SOCAL Range Complex and near San Clemente Island. As shown in that figure, hard bottom substrate covers significant portions of the proposed Tanner Bank and San Clemente Island Shallow Water Training Ranges.

However, the Navy CD also notes that in designated areas, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, the seafloor mitigation area features will be avoided only "to the maximum extent practical." In correspondence dated May 16, 2025, the Navy clarified that "[t]he excepted areas in

[57] www.bluewhalesblueskies.org
[58] Table for Representative Types, Sizes, and Speeds of In-Water Devices

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California are around [San Clemente Island] and [the Silver Strand Training Complex], where the same areas that have been used for decades for these same activities are used" and that "[t]hey cannot comply with the mitigation and the use of these areas is required for these activities, consistent with decades of use". The Navy further communicated that, for proposed SOAR and Shallow Water Training Range seafloor installations and the fiber-optic cable system, "hard bottom is avoided during installation to the greatest extent possible" and "[p]roposed cable routes were selected to target sandy substrate and avoid steep slopes and areas of high relief (e.g., rocky outcrops)".[59] However, based on this information, it is reasonable to conclude that some of the proposed cables and other seafloor infrastructure will be installed over or around rocky reef or hard substrate and may damage seafloor habitat, and therefore may not consistently provide special protection to such areas of special biological significance, which is necessary for consistency with Section 30230 of the CCMP.

Marine Mammals - Navy Conclusion

Concerning marine mammals overall, notwithstanding the large number of marine mammal harassment authorizations the Navy has requested from NMFS (over 5.5 million annually and over 30 million total over the 7-year period), the Navy believes the mitigation measures it has committed to are adequate to protect all populations of marine mammals. The Navy therefore concludes in its CD:

> Based on a detailed stressor analysis presented in the 2024 HCTT Draft EIS/OEIS, Section 3.7 (Marine Mammals), specifically Section 3.7.3 (Environmental Consequences) and, as summarized earlier, the Action Proponents have determined that the Proposed Action would be carried out in a manner that would maintain, enhance, and, where feasible, restore marine resources, sustain the biological productivity of coastal waters, and maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes. No population-level impacts would be anticipated to marine mammals. As evident from the standard operating procedures and mitigation measures discussed earlier, the Action Proponents' Proposed Action provides special protection to marine mammals. Therefore, the Proposed Action would be consistent to the maximum extent practicable with Section 30230 of the California Coastal Act.

Sea Turtles and Other Marine Species - Navy Conclusion

The Navy predicts impacts based on modeling to all four sea turtle species in the California project area of the HCTT[60] (all listed as endangered under the Endangered Species Act). For example, the Navy predicts its activities in the SOCAL Range Complex involving use of explosives, air guns, and sonar, would, annually subject up to 40 green sea turtle (Chelonia mydas) to significant behavioral response, 568 to

[59] The Navy also noted in this correspondence that "[s]eafloor cables will not be buried. Cables deployed in less than 100 ft. of water depth will be secured to the seafloor by divers using split pipe and clamps to prevent movement that could cause damage to both the equipment and the environment. It is anticipated that deep-water cables will become partially buried in unconsolidated sandy sediments that move or shift by slow-moving bottom currents or covered by encrusting algal and invertebrate communities."

[60] As well as impacts to the Hawksbill sea turtle, which is not analyzed in the CD for the California Area

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temporary threshold shift/hearing loss, 9 to auditory injury, and 1 to injury, mostly from proposed acoustic and oceanographic research activities. Tables 3.3-1, 3.3-4, and 3.3-6, of Appendix E of the DEIS (complied[61] as **Exhibit 29**), provide those estimates, as well as estimates for loggerhead and leatherback sea turtles (which include effects occurring in SOCAL, PMSR, and NOCAL, as well as outside of the California study area, in the Hawaii Range Complex or high seas). **Exhibit 30** also provides summaries of annual and seven-year effects estimates[62] by stressor for the entire HCTT study area (not just California) from Appendix E of the 2024 DEIS (Tables 3.3-7 through 3.3-21).[63]

As is the case described above for marine mammals, to minimize the potential for harm during activities potentially affecting sea turtles (including use of explosives, and use of mid-frequency sonar within the hearing range of sea turtles (i.e., <2 kHz), the Navy will implement mitigation measures involving monitoring and avoidance (i.e., cessation of the stressor until such time as an animal has left the area (or is believed to have left based on assumptions concerning its speed, direction and movement). With these measures, the Navy concludes:

> No population-level impacts would be anticipated to sea turtles. As evident from the standard operating procedures and mitigation measures discussed earlier, the Action Proponents' Proposed Action provides special protection to sea turtles. Therefore, the Proposed Action would be consistent to the maximum extent practicable with Section 30230 of the California Coastal Act.

In analyzing other marine habitats (e.g., sensitive marine vegetation (e.g., kelp beds), seabirds (including several listed species), and commercial and recreational fish stocks), the Navy also anticipates that impacts would be low. As noted earlier, the Navy has designated seafloor mitigation areas to further protect these habitats.

Commission Analysis of Effects of HCTT Activities on Marine Resources

In its consideration of proposed Navy training and testing activities in 2013 (consistency determination no. CD-008-13)[64], the Commission discussed activities it has found to meet the "effect" test of the CZMA and found:

> [T]he Commission takes a broad … view … as to which activities may affect the coastal zone. Many of the species … potentially affected by the proposed training activities spend some portions of their life cycles within coastal waters…
>
> To support this position, during … review [of prior Navy training and testing activities in CD-86-06] the Commission cited the NOAA letter dated March 10, 1995, responding to the Commission's request from the Office of Coastal Resource Management (OCRM) to review the effects of the "ATOC" sound

[61] Appendix E of the 2024 DEIS also includes similar tables for green (Central North Pacific DPS), hawksbill, Olive Ridley sea turtles, but only for effects in the Hawaii Range Complex of "high seas".
[62] Alternative 1 is the preferred alternative in the 2024 DEIS.
[63] Similar tables can also be found in Section 3.8 of the 2024 DEIS that combine training and testing activities by stressor.
[64] And also included in the findings for CD-0001-18, as written here.

> source[65], located 48 [NM] offshore of San Mateo County. In that letter NOAA affirmed that "sounds emanating from the ATOC sound source can be reasonably expected to affect marine mammals that are resources of both the outer continental shelf ("OCS") and the coastal zone…" and "OCRM has determined that the marine animals at issue that ply the waters of the coastal zone and the OCS are coastal resources."
>
> … the Commission's position [is] that … virtually all of the marine mammal species identified by the Navy as present in the SOCAL area are also present within the [state's] coastal zone at some point in their life cycle, and certainly at least "occasionally." Regarding the length of time a species must be present within the coastal zone to be considered a coastal resource, the Commission is in agreement that occasional observed or recorded presence is sufficient to establish this standard. Due to the significant challenges associated with wildlife observation in the marine environment (i.e. the cost of surveys, the short period of time most species are observable at the surface, the large areas, variable climactic and weather conditions, etc.) marine mammal surveyors typically assume that the number of animals successfully observed represent a small fraction of the actual number that are likely present. As such, the Commission considers even infrequent and seemingly rare sightings of particular marine wildlife species within the coastal zone as verification of that species' status as a coastal resource.
>
> Finally, similar to the Commission's long held position regarding effects to commercial fishing that occur in federal waters, but which affect the coastal economy, the Commission takes a comparable position that effects on whale watching, even if occurring in federal waters outside the coastal zone, should also be considered coastal zone effects, since whale watching tours are also an important segment of the California coastal economy, as well as an important component of coastal recreation. Whale watching tours regularly ply federal waters and commonly include sightings of many of the marine mammals present in the SOCAL area.

In the years prior to and since the Commission made these findings, this concept and logic establishing the Commission's authority to consider marine mammals (and other marine species) outside of the state's Coastal Zone as a coastal resource has been further established and reinforced. As such, anticipated and potential effects to these species must be considered by the Commission as part of its analysis under the California Coastal Management Program's marine resource protection policies. In doing so as part of the review of the currently proposed project, a number of issues arise with acceptance of the Navy's conclusions included above. As will be discussed below, the Commission's predominant concerns with the Navy's conclusions involve the significant level of anticipated adverse effects to coastal resources, particularly to marine areas and species of special biological significance, that would result from the proposed Navy activities. Of particular concern are: (1) the proposed expansion of ranges that will expose marine species to new stressors not currently and previously present in these

[65] ATOC is the acronym for Scripps Institution of Oceanography's Acoustic Thermometry of Ocean Climate, reviewed by the Commission as Consistency Certification CC-110-94.

areas; (2) the limited effectiveness of Navy detection and monitoring measures upon which its implementation of adverse impact avoidance and minimization measures is often based; (3) uncertainties in assessing population-level effects on marine species that may be occurring; (4) the anticipated occurrence of substantial marine mammal disturbance and harassments outside the 1000 meter detection/source reduction zones adopted by the Navy around its sonar sources; (5) the Navy's rejection of meaningful limits on sonar and explosives testing and training in areas of special biological significance such as state and federally designated marine protected areas, national marine sanctuaries and NMFS-designated biologically important areas for certain marine species (blue, fin, and beaked whales); (6) the proposed increase in the use of uncrewed vessels with high speed capabilities and limited visual coverage of mitigation zones for sensitive species; and (7) and the expansion of subsea infrastructure with the potential to damage or disturb sensitive rocky reef and hard substrate habitat areas without compensatory mitigation.

Marine Mammal Observers

During the Commission's past CD reviews of training and testing activities in the SOCAL range (including CD-0001-18) and PMSR (CD-0003-20), concerns have been raised about the adequacy of the Navy's vessel-based lookouts when compared with experienced, NMFS-certified, marine mammal observers in detecting marine mammals. The Commission has previously recommended that if the results of the Lookout Effectiveness Study that was ongoing at that time showed significant differences in effectiveness in observing marine mammals, the Commission would request that the Navy, to the extent feasible, commit to including at least two experienced, NMFS-certified marine mammal observers on all ships during the deployment of active sonar for training or testing purposes. The Commission's findings for CD-0001-18 (here: pages 39-40) also described the results of other previous studies which showed that nearly two-thirds of whales and dolphins sighted by NMFS-certified, marine mammal observers during the 2016 effort were missed by the Navy watchstander team. Combining those results with the four previous efforts, NMFS-certified marine mammal observers made 111 of 120 sightings (92%) while the Navy watchstanders made only 29 (24%). Although the Navy teams did make several sightings that the NMFS-certified observers did not, the specialized training and extensive experience of the NMFS-certified, marine mammal observers clearly provided them with a significant advantage in detecting marine mammals.

The Navy's report (Oedekoven and Thomas, 2022), dated March 22, 2022, on the results of its Lookout Effectiveness Study is now available[66] and has been reviewed by Commission staff. The data were collected from 27 embarks conducted between 2010 and 2019 (mostly on destroyer class ships) and "[a] total of 716 sightings of individual animals or groups were recorded across all embarks, of which, 544 sightings of cetaceans were used in the analysis." The report compares the effectiveness of Navy lookout teams and NMFS-certified, marine mammal observers in detecting marine mammals at ranges of 200, 500, and 1,000, yards. The report broke the results into four

[66] At https://www.navymarinespeciesmonitoring.us/reading-room/project-profiles/effectiveness-navy-lookout-teams-detecting-cetaceans-2/

main groups: large baleen whales, sperm whales, and small cetaceans in small pods (6 or less) and in large pods (more than 6). The estimated effectiveness was highest for large baleen whales for both observer groups. For that category at the 200-, 500-, and 1,000-yard-ranges, the estimated effectiveness by lookout teams was 35%, 21%, and 13%, respectively, and by marine mammal observers, it was 74%, 10%, and 54%, respectively. For the category of large baleen whales, NMFS-certified, marine mammal observers made 256 of 277 sightings (92%) while the Navy watchstanders made only 65 (23%). Again, the Navy teams did make several sightings that the NMFS-certified, marine mammal observers did not, but the final results are similar to those the Commission reviewed from 2016.

However, as described in the Commission's findings in support of its decision on the Navy's consistency determination for its 2018-2025 training and testing program (No. CD-0001-18), the effectiveness and ability of these trained NMFS-certified, marine mammal observers should not be overstated. As discussed in Moore and Barlow (2017) and Barlow (2016), even the most highly trained and experienced scientific observers are likely to miss the vast majority of potential sightings of many marine mammals. For example, the "detection probability" (or likelihood that a particular whale or dolphin will be observed when it is present) is below 60% for 24 of the 30 types of whale or dolphin targeted during marine mammal population surveys. This means that even experienced observers typically miss seeing roughly half of the animals that are present. For some species, such as most beaked whales, the detection probability is 16% or less; meaning that 84% of the time beaked whales are present, they are not being seen. Oedekoven and Thomas (2022) further estimated that the probability of large baleen whales approaching to within a 1,000-yard mitigation range **without** being detected was 91% for Navy lookout teams and 59% for NMFS-certified marine mammal observers.

That all being said, Appendix C of the Navy's CD does note that: "To qualify to stand watch as a Lookout, personnel undertake a training program that includes computer-based training, on-the-job instruction, and a formal qualification program. Lookouts are trained in accordance with the U.S. Navy Lookout Training Handbook or equivalent to use correct scanning procedures while monitoring assigned sectors, to estimate the relative bearing, range, position angle, and target angle of sighted objects, and to rapidly communicate accurate sighting reports. The U.S. Navy Lookout Training Handbook was updated in 2022 to include a more robust chapter on environmental compliance, mitigation, and marine species observation tools and techniques[.]" However, it is unclear to what extent lessons from the Lookout Effectiveness Study have been incorporated into these training efforts. The results of the Lookout Effectiveness Study indicate an opportunity for the Navy to help identify needs and opportunities for enhancing the abilities of Lookouts to detect marine mammals – including through revisions and improvements to the marine species awareness training module provided to all Navy Lookouts and through the integration of additional data sources from observation tools (such as infrared instruments and passive acoustic listening devices that can aid in determining marine mammal presence).

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The Commission also raised concerns in its findings for CD-0001-18 regarding the inadequacy of the distances at which the Navy's protocol would first mandate a reduction in sonar intensity if a marine mammal is observed, since the vast majority of marine mammals would likely respond in a significant behavioral manner at those distances from the most intense of the mid-frequency sonars. When these virtual certainties of a response are combined with the above-cited difficulties in detection, the data do not inspire confidence that adequate protection for marine mammals will be assured by the Navy's agreed-upon detection and avoidance measures. Additionally, it is concerning that the Navy has not committed to ensuring that uncrewed surface vessels that have the capability to travel at very high speeds have dedicated lookouts for marine mammals assigned to them (either onboard the uncrewed vessels or on a nearby support vessel). While lookouts stationed on support vessels may not be able to provide as extensive visual coverage as would onboard lookouts, they would nevertheless provide a greater level of assurance than a total lack of lookouts.

Population-Level Effects

The Commission disagrees with the Navy that a definitive conclusion can be drawn that the proposed activities would not have population-level effects on marine mammals, for several reasons. First, for all the populations of affected marine mammals, it is simply impossible to establish whether population level effects have been occurring, or would occur with the increased levels of activity, given that the Navy has been using this technology in the SOCAL Range Complex consistently for the past 40 years. As noted in the study cited by the Commission in 2013 and 2018,[67]

> High densities are not obviously consistent with a hypothesis that declines are due to military sonar, but they do not refute the possibility that declines have occurred in these areas (i.e., that densities were previously even higher).

The Commission previously noted in 2013 that this study posed a hypothesis that military sonar could be resulting in potential population-level effects for several species of beaked whales, which are the SOCAL species most sensitive to mid-frequency sonar, most likely to incur mortalities by stranding, and most difficult to detect by on-board observers. The Commission's 2018 findings provided an update from more recent studies (Barlow, 2016; Moore and Barlow 2017), provided by the Navy, in which the authors refined their statistical analysis and indicate that previously noted declines may be levelling off. The most recent NMFS stock assessment report (revised May 30, 2022) for the California/Oregon/Washington stock of the goose-beaked (formerly Cuvier's beaked) whale (Ziphius cavirostris)[68] describes a newer report, Barlow et al. (2021)[69], which used a different methodology to estimate the abundance of that stock of goose-beaked whales of 5,454 whales in 2016.

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[67] Moore and Barlow (2013).
[68] Stock assessment report for the California/Oregon/Washington stock of Ziphius cavirostris available at: https://www.fisheries.noaa.gov/s3/2023-08/Cuviers-CAORWA-2022.pdf
[69] Barlow, J., J.E. Moore, J.L.K. McCullough, and E.T. Griffiths. 2021. Acoustic-based estimates of Cuvier's beaked whale (Ziphius cavirostris) density and abundance along the U.S. West Coast from drifting hydrophone recorders. Marine Mammal Science 2021:1-22.

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In the "status of stock" discussion, the assessment notes[70] that trend estimates "indicate evidence of a population decline between 1990 and 2014" and that "the degree of decline (trend-fitted 2014 abundance at approximately 67% of 1991 levels) suggest that this stock may be below its carrying capacity." That "status of stock" section also notes that: (1) "[a]ssessing changes in abundance for any species may also be confounded by distributional shifts within the California Current related to ocean-warming (Cavole et al. 2015)"; (2) "Moore and Barlow (2013) ruled out bycatch as a cause of the decline in Cuvier's beaked whale abundance and suggest that impacts from anthropogenic sounds such as naval sonar and deepwater ecosystem changes within the California Current are plausible hypotheses warranting further investigation"; and (3) "[t]he impacts of anthropogenic sound on beaked whales remains a concern (Barlow and Gisiner 2006, Cox et al. 2006, Hildebrand et al. 2005, Weilgart 2007)".

Therefore, with goose-beaked whales as an example given the disproportionately large Level B take levels proposed for that species stock compared to its abundance estimates, the Commission maintains its position from previous reviews of Navy training and testing activities that conclusions cannot be drawn at this time that the proposed activities would not have population-level effects on marine mammals. The significant expansion of the Navy's training and testing program, which would introduce stressors to new geographic areas (including sonar and underwater explosives in PMSR, sonar in NOCAL, and other activities never in those ranges before) also plays a significant role in the increase in take estimates of marine mammals compared to previous Commission reviews, and raises questions about the effect that these additional takes would have on the various marine mammal populations.

Biologically Significant Areas and Adequacy of Mitigation Measures

Even if the Navy's conclusion were supportable concerning a lack of population-level effects, the Commission notes that this is only one of the tests of Section 30230. While Section 30230 does require that "Uses of the marine environment shall be carried out in a manner that... will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes" the policy also requires the biological productivity of coastal waters to be maintained; marine resources to be maintained, enhanced, and, where feasible, restored; and special protection to be given to areas and species of special biological or economic significance. The Commission finds, as it did in 2018 (and prior to that in 2008), that compliance with Section 30230 also requires enhancement (and where feasible restoration) of the overall marine environment, as well as special protection for areas and species of special biological or economic significance. These requirements have led the Commission to previously determine that consistency with Section 30230 requires the avoidance of the use of very loud active acoustics in biologically important and sensitive areas, in particular areas of high, or seasonally high, concentrations of marine mammals.

The Commission's findings for CD-0001-18 (here, on pages 42-44) describe the distance ranges to probable effect from the most intense of the mid-frequency sonars

[70] With references to: Moore and Barlow (2013); and Moore and Barlow (2017)

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(Sonar Bin MF-1), referencing information provided in the 2018 DEIS for the HSTT program that showed that the vast majority of marine mammals would likely respond in a significant behavioral manner (including 100% of beaked whales and over 90% of odontocetes in general) at a 1,000 meter distance, which is approximately the distance at which the Navy would implement the first protocol in reducing sonar intensity (by 6 dB) if a marine mammal is observed. The CD-0001-18 findings also noted that "for beaked whales, which are most difficult to detect, the range at which the probability of a behavioral response exceeds 80% is in the order of [tens] of kilometers." This is well beyond the effective survey range for marine mammal observers. Section A.2.3.3 of the Navy's 2024 LOA Application also notes: "All behavioral responses within 40 km are assumed to be significant for sensitive species [(beaked whales and harbor porpoise)], with some significant responses predicted as far as 100 km for the highest-level sonar sources."

The Navy's mitigation measures, include reducing sonar by 6 dB if an animal is observed within 1000 yards, by 10 dB if within 500 yards., and shutting down if an animal is within 200 yards. As noted above, this measure for all mid-frequency sonar would be supplemented by the designation of seasonal geographic mitigation areas and awareness/notification areas. However, when the virtual certainties of a response are combined with the above-noted difficulties in detection, only a small percentage of mammals will be protected under the Navy's protocols (which partially explains why the estimates of "take" in **Table 3** above are so high). As noted previously, even highly trained and experienced scientific marine mammal surveyors have less than a 16% chance of observing beaked whales when they are present within four kilometers.

Thus, even setting aside the concern over areas warranting special protection, the Commission has a number of concerns over the adequacy of the mitigation measures. These concerns are primarily over the uncertainties inherent in marine mammal detection, the uncertainties over population trends, the fact that the detection areas observed by the Navy are insufficient to protect marine mammals from significant behavioral impacts, the overall limited scientific understanding of the effects of mid-frequency sonar on marine mammals, and the extremely large number of harassments of marine mammals offshore of California expected under the Navy's activities, which, on an annualized average are estimated at 5.5 million marine mammals/year subject to Level B annual harassment, and 4.4 thousand marine mammals/year subject to Level A harassment. Additionally, some of the proposed cables and other seafloor infrastructure, including within state waters off San Clemente Island, are likely be installed over or around rocky reef or hard substrate and while some measures of avoidance are included "to the maximum extent practical," some level of disturbance of seafloor habitat is expected to occur and no compensatory mitigation is proposed. Further, the Navy did not specifically consider potential impacts to, or disturbances of, sensitive species populations (e.g. nesting birds or hauled-out pinnipeds) found along the shorelines and beaches where the proposed four new amphibious lanes would approach up to the mean high tide line.

Moreover, while the Navy currently acknowledges that biologically significant areas are present within the California training and testing areas, the Navy's conclusions

regarding the proposal's consistency with Section 30230 rest on the question of whether the Navy believes that any measures to protect these areas must be balanced against military security needs, and, ultimately, whether population effects can be documented.

As noted above, the Commission does not believe definitive conclusions can be drawn based on available data concerning whether the activities would or would not result in reductions in populations of marine species. The Commission does, however, believe sufficient information exists to determine that "areas of special biological significance" warranting strict protection under Section 30230 of the CCMP are present within the proposed project area, and that the levels of protection offered by the Navy are insufficient. Accordingly, the Commission finds the activities, as proposed, would be inconsistent with the provision of Section 30230 that requires that "[s]pecial protection shall be given to areas and species of special biological or economic significance."

Modifications Needed for Consistency with Section 30230 of the CCMP

The adopted findings for the Commission's 2018 objection to the 2018-2025 Navy offshore training and testing program (consistency determination no. CD-0001-18) included several measures and project modifications that the Commission found to be necessary to bring that program into consistency with Section 30230. Similarly this report also includes several modifications that the Commission has concluded would be necessary for the Navy to adopt for its proposed HCTT activities off the coast of California to be consistent with Sections 30230 of the CCMP, as detailed in the findings below.

In order to bring the proposed activities into consistency with Section 30230 of the CCMP, the Commission concludes that the Navy would need to include the following eight modifications, listed below, into the proposed HCTT activities. Several of these(nos. 2-5)[71] were also similarly identified as necessary modifications and included in the Commission's findings in support of its objection to the Navy's 2018-2025 program (CD-0001-18[72]). Those items remain essentially unchanged while others have been added or revised based on the Navy's new proposed mitigation measures and the change in project scope, including the significant proposed geographic expansion and introduction of stressors to new areas.

[71] Previously numbered as 1, 3, 4, and 5, in CD-0001-18.

[72] In its findings for CD-0001-18 (here), the Commission also recommended that the Navy strongly consider the information and mitigation recommendations made by the Natural Resources Defense Council (NRDC), and summarized four information requests and 12 recommendations. To the degree that those are still relevant, the Commission would support the Navy further exploring these possible measures, but they are not the focus of this report.

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(1) Modifications to proposed geographic mitigation areas:
   a. Expand the boundaries of the geographic mitigation areas for large whales, with prohibitions on use of MF1 mid-frequency sonar and in-water explosives, to include sensitive areas: (i) the 2024 "Core" BIAs for blue, humpback, and fin whales, for their designated seasons; (ii) any biologically sensitive area NMFS may designate at a future date; (iii) nearshore areas; (iv) National Marine Sanctuaries; and (v) State-designated marine protected areas and adjacent Federal marine protected areas, year round;
   b. Seasonally limit the use of in-water explosives in the Central and Northern California Large Whale Mitigation Areas;
   c. Expand the seasonality of all three whale mitigation areas to April 1 – December 31;
   d. Reduce the threshold number of large whales in the real-time awareness area to one or more rather than four or more;
   e. Include the San Nicholas Island Mitigation Area and Santa Barbara Island Mitigation Area, as previously included by the Navy in its 2018-2025 HSTT project, as continued geographic mitigation areas with prohibitions on use of mid-frequency sonar and in-water explosives in those mitigation areas; and
   f. Limit use of dipping sonar to the maximum extent practicable within geographic mitigation areas for whales (including for any modifications adopted for areas/requirements from other subparts of Measure 1);

(2) Establishment of larger shutdown areas (up to 2 km) during use of MF-1 sonar (i.e., shut down if a marine mammal or sea turtle is detected within 2 km of the mid-frequency sonar source);

(3) Reduction in sonar intensity under low-visibility conditions;

(4) Limitations on vessel speeds in sensitive areas to 10 knots (unless higher speeds are critical to meet training needs); and

(5) Use of NMFS-certified marine mammal observers on all ships during the use of MF1 sonar sources and explosives for training and testing purposes

(6) Mandatory use of support vessels with assigned lookouts for uncrewed surface vessels when they are traveling faster than 10 knots

(7) Seasonal limits to amphibious vehicle operations in the surf-zone in the four new amphibious corridors to protect nesting birds and pinniped haul-outs

(8) Development and implementation of a rocky reef and hard substrate impact mitigation plan

Despite the Navy's rejection of the four measures carried over from CD-0001-18 and their reasoning provided in 2018 (as well as in their CD submittal and supplemental materials), the Commission maintains that those activity modifications are still necessary to bring the activities into consistency with Section 30230 of the CCMP to the maximum extent practicable, as described further below.

(1) Modifications to proposed geographic mitigation areas

The establishment of mid-frequency sonar avoidance areas, including MPAs, National Marine Sanctuaries, NMFS-designated Biologically Important Areas (BIAs), and other areas of likely high marine mammal concentration, is a critical protective measure because it would help insulate marine mammals and habitats in these areas of special biological significance from disturbance, harassment, and take due to elevated sonar levels. In the case of the state and federal MPAs and the National Marine Sanctuaries, these sites were established at specific locations based on many years of scientific research, monitoring, and survey work that confirmed the presence of sensitive marine habitats and oceanographic features (highly productive persistent upwelling zones, seamounts, unique underwater canyons, etc.) and documented high levels of use by culturally, economically, and ecologically important species of marine wildlife (including protected seabirds, marine mammals, fish and invertebrates).

The BIAs were identified through a years-long, extensive, science-based, process focused on demarcating sites of persistent high-use and high-density of marine mammals. In many respects, the process used to identify and designate those sites was similar to that used to identify MPAs, with the primary difference being the more singular focus on whale and dolphin use rather than the wider range of habitat and wildlife use documented in the MPAs. The BIAs included along the coast of California south of Point Conception are particularly focused on blue whale, humpback whale, and fin whale use and their biological importance and the rationale for their designation is described above. **Exhibit 31** shows the Navy's currently proposed (Phase IV) geographic mitigation areas in comparison to: (1) the combined new core BIAs for blue, fin and humpback whales; (2) the National Marine Sanctuaries, State-designated marine protected areas and adjacent Federal marine protected areas; and (3) the Navy's 2018 HSTT mitigation areas (Phase III), for context.

While it largely rejected the Commission's efforts in 2018 to expand and strengthen the area protections integrated into its trailing and testing program, the Navy ultimately agreed to incorporate some new mitigation areas in Southern California. These included two additional blue whale Biologically Important Areas (BIA) as well as an agreement that training activities with active sonar or explosives would not be conducted in specific state Marine Protected Areas as shown on page 40 of Commission staff's memo dated August 30, 2018 (found here). However, those additional mitigation areas were not carried forward into the new proposed HCTT mitigation areas, despite the fact that the majority of the Phase III mitigation area off of Orange County is within the new fin whale BIA, and the Phase III north of San Nicholas Island (the "San Nicholas Island Mitigation Area")[73] is fully within the core fin whale BIA and mostly within the revised core blue whale BIA. Additionally, the previously-included Santa Barbara Island Mitigation Area[74] includes the Santa Barbara Island state and Federal Marine Reserves and the southern portion of the Channel Islands National Marine Sanctuary. The removal of these areas represents a reduction in size of the proposed whale mitigation areas south of Ventura County by approximately 478 square miles (from 608 mi^2 in Phase III to 130 mi^2 in

[73] Previously a June-October mitigation area.
[74] Previously a year-round mitigation area.

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Phase IV). While the new Northern and Central California proposed large whale mitigation areas represent roughly a combined 12,800 square miles, the level of activity proposed in these areas is significantly less than in the SOCAL area and seasonal restrictions in those areas are limited to MF1 sonar limits (not in-water explosives prohibitions) and are located in areas where MF1 sonar has not historically been used as part of these activities. The Navy has not provided a thorough explanation for why these previously protected mitigation areas are no longer proposed for protection from its activities (**Exhibit 31**), but noted that the new training and testing activities proposed and the expansion of their action areas were factors considered in addition to their assessment of updated science

To protect whales in such sensitive areas not covered, as described above, Measure (1a) would expand the boundaries of the geographic mitigation areas, with prohibitions on use of MF1 mid-frequency sonar and in-water explosives. Regarding the other elements of "modification 1": Measure (1b) would have the Navy, at the very least, seasonally limit the use of in-water explosives in the Central and Northern California Large Whale Mitigation Areas (similar to the seasonal limits in the Southern California Blue Whale Mitigation Area). Further, Measure (1c) would extend the seasonality of the three large whale mitigation areas to April 1 – December 31, rather than June through the end of October, to better reflect evidence (from sightings data and passive acoustic detections) indicating that blue whales occur off southern California on a nearly year-round bases (Szesciorka et al., 2020), with higher densities between April and December, and that humpback whales are increasingly present off central California through December due to changes in migratory patterns linked to climate change (Santora et al., 2020; Saez and DeAngelis, 2021). Measure (1d) would reduce the threshold number of large whales in awareness areas needed to trigger the Navy's awareness and notification protocols (described above in the Project Description), and thus providing greater assurance that training and testing activities would avoid disturbance or harm to groups and individuals, especially given that the identification of one whale does not preclude other whales being present nearby without being identified simultaneously.

Further, Measure (1e) would require the San Nicholas Island Mitigation Area and Santa Barbara Island Mitigation Area to be carried forward as continued geographic mitigation areas with prohibitions on use of mid-frequency sonar and in-water explosives, to serve as refuges for localized population of goose-beaked whales in the San Nicolas Basin and other sensitive populations of marine mammals. Finally, Measure (1f) would limit use of dipping sonar to the maximum extent practicable within geographic mitigation areas for whales. This measure is intended to apply to both the currently proposed geographic mitigation areas, as well as to any extensions of those areas through other parts of Measure 1. As described above, in the findings section for "Beaked Whales," impacts to behaviors of goose-beaked whales from dipping sonar at close ranges are comparable to MF1 sonar and its unpredictable use can make it more likely to cause a response. Despite this, the Navy does not currently propose geographic-mitigation areas for dipping sonar in the California portion of the HCTT study area, although, the Navy does include a limit of 20 hours of helicopter dipping sonar annually within their

"Hawaii Island Marine Mammal Mitigation Area" proposed in the 2024 DEIS (outside of the area covered by this CD).

In Table C-15 of Appendix C to the CD (**Appendix D** to this report) the Navy indicates that it considered potential measures such as these but eliminated them as impractical. These considered measures include additional geographic mitigation for active sonar in areas with certain bathymetric features (item 17 in table), restrictions on the locations and timing of training (items 18 and 19), prohibiting activities in areas with low historic use (item 21), additional seasonal restrictions for training and testing based on species occurrence or density (item 22), geographic restrictions within certain regions/areas (item 24), expansion of existing geographic mitigation to the full extent of newly identified biologically important areas (item 35). In correspondence dated May 21, 2025, the Navy confirmed that it currently does not plan to expand the extent of geographic mitigation areas. However, the Commission maintains that those activity modifications are necessary to bring the proposed project into consistency with the relevant enforceable policies of the CCMP.

(2) Shut-down Areas

The larger shutdown areas around sound sources are necessary because they would allow sound levels to attenuate further before being received, thus helping increase the likelihood that elevated levels of underwater sound are reduced or halted before they significantly affect marine mammal behavior. Compared to the 1,000-yard distance that the Navy is proposing, a two kilometer distance (approximately 2,187 yards) would reduce the probability of a behavioral reaction in many marine mammal species. Although an even greater distance would further reduce this probability, it may not be significantly more effective due to the fact that the likelihood of detecting a marine mammal at sea declines sharply as distance increases. In Table C-15 of the CD (**Appendix D**), item number 15, includes the Navy's assessment of "Increasing mitigation zone sizes", the Navy indicates that it considered, but eliminated, this potential measure for safety, sustainability-of-implementing, and mission objective reasons. However, as it did in 2018, the Commission maintains that those activity modifications are still necessary to bring the proposed project into consistency with the relevant enforceable policies of the CCMP.

(3) Low Visibility Conditions

Even under daylight hours with calm sea-state conditions, it is extremely difficult to detect many species of marine mammals. This likelihood of detection declines sharply as sea-state conditions and visibility deteriorates. Therefore, under these types of low-visibility conditions, the effectiveness of ship-board marine mammal observers cannot be relied on as a meaningful impact avoidance or minimization measure. As such, Modification (3) calls for sonar levels to be reduced during such situations in order to help prevent marine mammals from being exposed to high-intensity levels of underwater sound. In Table C-15 of the CD(**Appendix D**), under item number 23, "Restricting active sonar based on time of day or visibility (e.g., weather conditions)", the Navy indicates that it considered, but eliminated this potential measure for mission objective reasons. However, as it did in 2018, the Commission maintains that those

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activity modifications are still necessary to bring the proposed project into consistency with the relevant enforceable policies of the CCMP.

(4) Vessel Speed Limit

The relationship between vessel speed and the likelihood and consequences of collisions with large whales has been closely evaluated over the past two decades as a result of the significant threat posed by ships to the highly endangered North Atlantic right whale and the series of ship strike mortalities recorded within the Santa Barbara Channel in 2007 (five blue whale mortalities from ship strikes within two months). This research has shown that a 10-knot speed limit reduced the risk of fatal ship strikes to right whales by 57% (Wiley et al. 2011) and that generally, vessel speed restrictions reduced total ship strike mortality risk levels to whales by 80–90% (Conn and Silber 2013). The need for the issue of ship strikes to be comprehensively and consistently addressed is increasingly recognized. For example, research modeling ship strike mortality for blue, fin, and humpback, whales in U.S. West Coast waters indicates that even under the most conservative assumptions, "estimated mortality [is] 7.8x, 2.0x and 2.7x the U.S. recommended limit for blue, humpback and fin whales, respectively, suggesting that death from vessel collisions may be a significant impediment to population growth and recovery" (Rockwood et al. 2017). While work is currently underway to investigate opportunities for addressing ship strikes involving commercial vessels - including efforts by the Marine Shipping Working Group convened by the Channel Islands National Marine Sanctuary (CINMS) and the Voluntary Ship Speed Reduction Program developed by CINMS, the Santa Barbara County Air Pollution Control District and the Environmental Defense Center[75], Modification (4) above would expand them to incorporate another significant source of marine traffic, the Navy's proposed training and testing program. In Table C-15 of the CD (**Appendix D**), under item number 16, "Implementing mandatory vessel speed restrictions", the Navy indicates that it considered, but eliminated this potential measure for safety, sustainability-of-implementing, mission objective reasons. However, as it did in 2018, the Commission maintains that those activity modifications are still necessary to bring the activities into consistency. At a minimum, seasonal vessel speed limits (including for uncrewed vessels) for the three whale mitigation areas and National Marine Sanctuaries, would be needed for consistency with 30230.

(5) NMFS-certified Marine Mammal Observers

For several years, the Navy has been periodically including trained non-Navy marine mammal observers (MMOs) on its vessels during training operations to study their effectiveness at detecting marine mammals compared to teams of Navy watchstanders. Six of these "lookout effectiveness studies" were carried out between 2011 and 2016, and the results unequivocally show that trained, NMFS-certified MMOs are significantly more likely to detect marine mammals, often overwhelmingly so. As discussed above, this basic conclusion was recently corroborated by the Navy's own Lookout Effectiveness Study (Oedekoven and Thomas, 2022). Given the heavy reliance placed on detecting and reacting to the presence of marine mammals as an adverse impact

[75] bluewhalesblueskies.org

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avoidance and minimization measure, it is clear that if this approach is to continue to be relied on as an effective impact avoidance and minimization strategy, it should be combined with observers that are more likely to make successful detections. As such, Modification (5) calls for the Navy to commit to using NMFS-certified MMOs on all ships during the deployment of MF1 sonar sources and explosives for training or testing purposes. These marine mammal observers would notify appropriate Navy personnel of all marine mammal detections and would assist in the enforcement of marine mammal safety zones. In Table C-15 of the CD (**Appendix D**), under item numbers 6 ("Adding third-party marine species observers to conduct visual observations that inform mitigations for additional event types") and 39 ("Requiring NMFS [Protected Species Observer] certification for Navy Lookouts"), the Navy indicates that it considered, but eliminated this potential measure as requiring substantial additional resources and being impractical and not sufficiently beneficial. The Navy claims that their lookout training and qualification program already achieves the appropriate level of training. However, the results of the Lookout Effectiveness Study discussed above do not sufficiently support that assertion. However, as it did in 2018, the Commission maintains that those activity modifications are still necessary to bring the activities into consistency.

(6) Lookouts for Uncrewed Vessels at High Speeds

In correspondence dated May 21, 2025, the Navy stated: "While there are some activities where USVs would have support vessels, the Navy is unable to commit to providing dedicated support vessels during USV use in [the large whale] mitigation areas. USVs are designed to operate autonomously and it is important that Navy trains in a realistic manner to how USVs would be used operationally." However, for the reasons described above for vessel speeds and marine mammal observers, the Commission finds that, at a minimum, uncrewed surface vessels should use accompanying support vessels with assigned lookouts (ideally certified marine mammal observers, consistent with the above measure) when they are traveling faster than 10 knots.

(7) Limits on Surf-Zone Amphibious Lane Use In Sensitive Species Seasons

In its CD submittal, the Navy did not specifically consider potential impacts to, or disturbances of, sensitive species populations (e.g. nesting birds, such as western snowy plover, or hauled-out pinnipeds) found along the shorelines and beaches where the proposed four new amphibious lanes would approach up to the mean high tide line. These operations could have the potential to startle and disturb such species, inconsistent with the CCMP's policies for areas of special biological significance and environmentally sensitive habitat areas[76]. In correspondence dated May 21, 2025, the Navy has indicated that the potential for such impacts would be evaluated at a later

[76] Section 30240 of the Coastal At states: "(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas."

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date, in conjunction with the U.S. Marine Corps as the planning for amphibious training exercises matures. Nonetheless, given that there are several beaches in the proposed amphibious lane areas with known seasonal breeding populations of sensitive species, including at Oceano Dunes and along the shoreline of Vandenberg Space Force Base, the Navy should commit to seasonal limits on amphibious vehicle operations in the surf-zone in the four new amphibious corridors to protect nesting birds and pinniped haul-outs.

(8) Rocky Reef and Hard Substrate Impact Mitigation

As described above in the "Installation of New Seafloor Infrastructure" section, some of the proposed cables and other seafloor infrastructure are likely be installed over or around rocky reef or hard substrate and some level of damage to or disturbance of seafloor habitat is expected to occur. In correspondence dated May 16, 2015, the Navy stated that for cable and seafloor instrumentation installation: "…hard bottom is avoided during installation and routes are determined by bathymetric surveys. Committing to mitigation measures beyond the standard operating procedures already in place would not add sufficient benefit to the resource and would be impractical to implement because there is no way to verify exactly how close the cable is to the 350 yd. buffer during cable laying." However, the Commission disagrees with the Navy's assessment, and notes that the verification of seafloor cable position and habitat impacts is done routinely following the laying of commercial fiber optic cables. A reasonable modification would be for the Navy to evaluate any sensitive habitat damage or disturbance caused by the installation of seafloor infrastructure and if such damage occurred, commit to an offsetting level of compensatory mitigation such as through commitments to remove existing anthropogenic material (retired/defunct seafloor infrastructure or other marine debris) with the potential to harm rocky reef and hard substrate in areas adjacent to these new installations. Debris removal could be implemented as part of retrieval activities of some materials used during training and testing activities or through other targeted removal efforts or could be carried out through partnerships with other agencies or organizations.

Navy's Elimination of Other Measures Considered

In addition to the rejection by the Navy of proposed measures as described above, in Table C-15 of the CD (**Appendix D**) the Navy presents a total of 39 mitigation measures that were considered but eliminated based on their practicality assessment for safety, sustainability, and mission, as well as if they consider a measure to be "not sufficiently beneficial". Table C-14 of the CD (**Appendix D**) also provides a summary of new or modified mitigation requirements compared to those included in CD-0001-18 for the HSTT and CD-0003-20 for the PMSR.

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Conclusion

Therefore, based on the analysis and findings above, the Commission finds that the activities proposed in the Navy's consistency determination for the HCTT program off the coast of California are inconsistent with Section 30230 of the California Coastal Management Program. This finding is based primarily on: (1) the proposed expansion of ranges that will expose marine species to new stressors not currently and previously present in these areas; (2) the limited effectiveness of Navy detection and monitoring measures upon which its implementation of adverse impact avoidance and minimization measures is often based; (3) uncertainties in assessing population-level effects on marine species that may be occurring; (4) the anticipated occurrence of substantial marine mammal disturbance and harassments outside the 1000 meter detection/source reduction zones adopted by the Navy around its sonar sources; (5) the Navy's rejection of meaningful limits on sonar and explosives testing and training in areas of special biological significance such as state and federally designated marine protected areas, national marine sanctuaries and NMFS-designated biologically important areas for certain marine species (blue, fin, and beaked whales); (6) the proposed increase in the use of uncrewed vessels with high speed capabilities and limited visual coverage of mitigation zones for sensitive species; and (7) and the expansion of subsea infrastructure with the potential to damage or disturb sensitive rocky reef and hard substrate habitat areas without compensatory mitigation.

E. Cultural Resources

Section 30244 of the Coastal Act states:

> Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

The Navy's evaluation of the proposed project's potential to affect cultural resources in its CD is primarily focused on proposed geographic mitigation measures to avoid impacts to shipwrecks (**Exhibit 20**) from explosives and physical disturbances/strikes by anchors or other devices interacting with the seafloor, as described in Section C.7.1 of Appendix C of the CD (see **Appendix D**). Section 3.10 (Cultural Resources) of the 2024 DEIS focuses on these submerged cultural resources as well and the Navy notes that "[l]and components are excluded from this EIS/OEIS, except for acoustic impacts on pinnipeds from ongoing land-based launch activities at [San Nicolas Island], which are considered for MMPA authorization". In that section of the 2024 DEIS, the Navy concludes:

> Although potential effects on cultural resources from military readiness activities may occur, they are not expected to lead to permanent damage or alteration to the character-defining features of the resource.
>
> Overall types and locations of military readiness activities are not expected to change from those currently conducted by the military in the Study Area, and the associated [standard operating procedures] that protect submerged cultural resources and historic properties remain in place and would continue to be

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> implemented. As a result, the analysis of the effects on cultural resources from explosives and physical disturbance and strike stressors during military readiness activities under [the proposed project alternative] are consistent with a less than significant determination.

The Navy's efforts to reach out to and consult with potentially affected Native American Tribes as part of the proposed project are described above in Section IV.C. Section 3.10 (Cultural Resources) of the 2024 DEIS.

As part of its review of the Navy's proposed activities, Commission staff requested a tribal consultation list from the Native American Heritage Commission (NAHC) for all of the coastal areas of the following counties: San Diego, Orange, Los Angeles, Ventura, Santa Barbara, San Luis Obispo, Monterey, Santa Cruz, San Mateo (from approximately Ano Nuevo State Park to San Gregorio), San Francisco, Marin, Sonoma, and Mendocino (from southern border, up to approximately the City of Manchester). The NAHC responded with a list of representatives from 98 different Tribes. Commission staff sent a letter to each of these Tribes to inform them of the Commission's federal consistency review process and timing and to invite further consultation. This outreach resulted in a conference call with representatives of two individual tribes, the Campo Band of Diegueno Mission Indians and the Rincon Band of Luiseno Indians.

The representative of the Campo Band of Diegueno Mission Indians noted that the Tribe's concerns with the proposed project are in the area of San Diego County. The Tribe noted historical issues, including the fact that Silver Strand was the site of a large Kumeyaay village until the late 19th century, and that tribal members were relocated for the construction of the naval base (now Silver Strand Training Complex). As noted in the Project Description (above) a number of HCTT activities are proposed just offshore of Silver Strand.

The Tribe also noted that that tribal knowledge is older and broader than archaeology, and is not the same as cultural resources monitoring, and historic that shipwrecks can be of interest since Spanish ships were sometimes transporting tribal cultural resources back to Spain; depending on how old a shipwreck is it could hold important cultural resources.

The representatives of the Rincon Band of Luiseno Indians noted that while their reservation is in San Digo County, their Tribe's traditional use of areas includes the southern Channel Islands and areas of Camp Pendleton as well as other counties, and that San Clemente and San Nicholas islands have been determined to hold traditional cultural significance. They expressed that their cultural resources concerns cover the full spectrum of interconnections between island and mainland and noted that the shoreline has shifted over time and there are tribal cultural resources that are now underwater. They expressed concern about cumulative or aggravating effects to cultural resources in these areas and mentioned that additional mitigation measures may be appropriate. They noted tribal values of kinship and relation to animals, and that natural resources are also cultural resources.

Commission Staff also received correspondence from the Salinan Tribe of Monterey and San Luis Obispo Counties, indicating that the proposed project would occur in in coastal waters of their traditional territories and expressing opposition to the proposed activities, including the following comments:

> The[re] are many recorded sacred site and burial areas along the coastline. We have many concerns that submerged village and cultural sites may be impacted by the project. Also we consider the waters of the Pacific as Sacred. This area of the central coast of California is the Western Gate, in which we are the gate keepers to [e]nsure that the deceased souls of our people are able to enter the spirit world. All of the activity may interrupt their journey to the after life.

If further correspondence is received from any tribes before the hearing on this staff recommendation, the Commission will address them in a separate addendum to this report. Four other tribes responded indicating that they were not requesting formal consultation at this time.

The Commission agrees with the concerns expressed by these tribes regarding the expansive nature of tribal cultural resources, including submerged lands and marine resources, including marine species, and agrees that the Navy should do all it can to address the potential impacts on this broader range of tribal cultural resources, beyond the limited scope of resources considered in their CD and DEIS. The Commission addresses concerns related to marine resources in Section IV.D above and has concluded that the proposed project would not be consistent with the marine resources policies of the CCMP. Though the focus of the policy wording in Section 30244 is on archaeological resources identified by the SHPO, since adoption of its Tribal Consultation Policy in 2018, the Commission has consistently recognized the importance of protecting archaeological resources broadly defined as tribal cultural resources, including sites, features, places, cultural landscapes[77], sacred places, and objects with cultural value to California Native American Tribes, including those that are included or determined to be eligible for inclusion in the California Register of Historical Resources and those included in a local register of historical resources as defined in Public Resources Code Section 5020.1(k). Tribal cultural resources may also include historical resources described in Public Resources Code Section 21084.1, a unique archaeological resource as defined in Public Resources Code Section 21083.2(g),[78] or a "nonunique archaeological resource" as defined in Public Resources Code Section 21083.2(h).[79]

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[77] A cultural landscape is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

[78] As defined in that section, "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; (2) has a special and particular quality such as being the oldest of its type or the best available example of its type; (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

[79] As used in this section, "nonunique archaeological resource" means an archaeological artifact, object, or site which does not meet the criteria in subdivision (g).

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The Commission encourages the Navy to continue consulting on potential impacts to cultural resources (including more broadly than just for submerged resources identified, such as shipwrecks) with any Tribe that expresses interest. Based on the information currently available, however, the Commission agrees with the Navy that the proposed project is consistent with the cultural resource policy of the Coastal Act. The Navy is implementing reasonable mitigation measures for activities carried out offshore of California, including measures to avoid impacts to known cultural resources. For these reasons, the Commission concludes that the proposed project is consistent with Coastal Act Section 30244.

F. Commercial and Recreational Fishing / Access and Recreation

Section 30210 of the Coastal Act states:

> In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30212 (a) of the Coastal Act states:

> a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) It is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, ….

Section 30220 of the Coastal Act states:

> Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Section 30234.5 states:

> The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.

Concerning fishing, the Navy's consistency determination notes that training and testing activities have been conducted in this area for decades, and that measures will continue to be undertaken to prevent interruption of commercial and recreational fishing activities. To minimize potential military/civilian interactions, the Navy publishes scheduled operation times and locations on publicly accessible Navy websites, and through U.S. Coast Guard issued Notices to Mariners, up to six months in advance. In addition, if the Navy discovers nonparticipants present in an exclusion zone, the Navy will halt or delay (and reschedule, if necessary) all potentially hazardous activity until the nonparticipants have exited the exclusion zone. The Navy further states:

> The Action Proponents may also temporarily establish an exclusion zone for the duration of a specific activity (e.g., an activity involving the detonation of

explosives) to prevent non-participating vessels and aircraft from entering an unsafe area. Establishment of an exclusion zone would temporarily limit commercial and recreational fishing in that specific area; however, other areas in the HCTT Study Area would remain open to commercial and recreational fishing (U.S. Department of the Navy, [2015]). The Action Proponents do not exclude fishing activities from occurring in areas of the HCTT Study Area that are not being used during military readiness activities.

Military readiness activities that are new for the 2024 HCTT Draft EIS/OEIS, such as the modernization and sustainment of ranges and amphibious landings in the NOCAL Range Complex are similar in nature to the activities that have been historically conducted in the Study Area. These activities would have minimal anticipated effects on commercial and recreational fishing because inaccessibility to areas of co-use for military readiness activities would be temporary and of short duration, lasting until an activity concludes. In addition, the Action Proponents have implemented standard operating procedures to improve communications between the military and fishers, both recreational and commercial, and reduce the number of instances when fishers must leave a temporarily closed area. Other areas not in use or temporarily restricted would remain accessible and available for use.

The Commission agrees with the Navy that impacts would be minimal, noting that the Navy has historically conducted numerous military testing and training activities throughout the California area of the proposed HCTT program without apparent significant conflicts with commercial and recreational fishing.

The proposed project also may result in changed access to ocean waters for recreation. As has historically been the case, Navy testing and training activities necessitate clearance of non-military boats and personnel (including both commercial and non-commercial activities) from their action areas for safety purposes. However, to minimize disruptions, the Navy currently conducts several public notification procedures prior to test and training events, including publishing Notice to Mariners for, among other things, sport boats bringing recreational fishermen, divers, or tourists to the waters surrounding the Channel Islands or other offshore areas. Additionally, it is worth noting that many of the proposed training and testing activities would occur relatively far offshore, where the frequency and concentration of recreational activities are generally less.

The Commission concurs with the Navy's findings that proposed clearances in the California area of the proposed HCTT program are necessary both for military security and public safety needs. In addition, given the relatively short duration and small size of any affected area at a given time and the availability of many alternate nearby locations for public access and recreation, the Commission also concurs with the Navy's finding that the proposed project will not affect existing public access opportunities on the Channel Islands or the mainland. The Commission therefore concludes that the proposed training and testing activities would be consistent with the commercial and recreational fishing policies (Section 30234.5), and public access and recreation policies (Sections 30210, 30212, and 30220) of the Coastal Act.

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IN REPLY REFER TO:
5090
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Ms. Kate Huckelbridge
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Ms. Huckelbridge:

SUBJECT: CONSISTENCY DETERMINATION FOR PROPOSED MILITARY READINESS ACTIVITIES WITHIN CALIFORNIA

Thank you for your considerable efforts during the Federal Consistency process for the military readiness activities within the California Study Area, as proposed in the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). The Navy received the Commission's letter dated June 13, 2025, documenting its June 12, 2025 decision to object to the Navy's Consistency Determination (CD). Given that the Navy has made every effort toward resolving differences regarding how the Navy's activities to be consistent with Section 30230 of the Coastal Act pertaining to marine resources to include the willingness to continue dialogue and achieve concurrence, the Navy maintains that the proposed activities are consistent to the maximum extent practicable at this time. Having considered the grounds for the Commission's objections, and having been unable to reach a resolution, the Navy hereby provides notification pursuant to 15 C.F.R. §930.43(e), that it will proceed with the proposed HCTT activities upon completion of all regulatory processes. The Navy has determined that these activities are fully consistent with the applicable enforceable policies of the California Coastal Management Program (CCMP), in accordance with 15 C.F.R. §930.43(d)(2).

The Navy and California Coastal Commission have disagreed over the years on the appropriate degree of mitigation to satisfy the consistency with Section 30230. In advance of the Commission's decision on this CD, the Navy worked closely with your staff and thoroughly discussed the issues that ultimately formed the basis for the Commission's objection. These extensive discussions and coordination meetings began before the CD was submitted and continued throughout the process. The Navy provided a substantial amount of additional information about the HCTT EIS activities, along with detailed explanations regarding why the Commission's proposed alternative mitigation measures were either not needed for consistency with the CCMP enforceable policies or are not possible or practicable for the Navy to implement while meeting its mission requirements to conduct realistic training and testing off the coast of California. This additional information included a presentation to the Commission on April 11, 2025 in Santa Barbara, responses to various requests for information during the development of the staff report, and participation in numerous discussions with the Commission's staff. A summary of the Navy's position on each alternative mitigation measure is enclosed.

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Though the Navy cannot agree to implement the specific alternative mitigation measures that were the basis of the Commission's objection, it has a comprehensive, science-based suite of mitigation measures (fully described in the CD) that will be implemented upon completion of the HCTT EIS process, including any additional mitigation requirements that the National Marine Fisheries Service may impose as part of its Biological Opinion and Letter of Authorization.

The Navy values and protects California's coastal and marine resources for this is where our service members live, train and defend our homeland. We are proud of the environmental stewardship demonstrated at our installations and during our testing and training activities. While this completes the Coastal Zone Management Act (CZMA) Federal Consistency process for the current HCTT effort, we look forward to continuing our close relationship with the Commission.

If you have any questions, please contact Mr. Alex Stone, U.S. Pacific Fleet, via phone at [redacted] or via e-mail at [redacted]; or Ms. Kelly Finn, Commander Navy Region Southwest, via phone at [redacted] or via e-mail at [redacted]

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: Navy Response to Commission Measures

Copy to:
Chief of Naval Operations (N4I)
Commander, Navy Region Southwest (N40)
Mary Alice Evans, Hawaii Department of Business, Economic Development & Tourism, Office of Planning

2

J.2.2 Hawaii

STATE OF HAWAI'I
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARY ALICE EVANS
INTERIM DIRECTOR

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Mailing Address: P.O. Box 2359, Honolulu, Hawai'i 96804

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Coastal Zone Management Program
Environmental Review Program
Land Use Commission
Land Use Division
Special Plans Branch
State Transit-Oriented Development
Statewide Geographic Information System
Statewide Sustainability Branch

DTS202312191034ME

December 20, 2023

Naval Facilities Engineering Systems Command Pacific
Attention: HCTT EIS/OEIS Project Manager
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

Dear Project Manager:

Subject: Hawaii Coastal Zone Management (CZM) Program Federal Consistency Review Required for U.S. Navy Hawaii-California Training and Testing (HCTT) Activities

According to Vol. 88 Federal Register 86885 (December 15, 2023), the Department of the Navy has published a Notice of Intent to Prepare an Environmental Impact Statement/Overseas Environmental Impact Statement for Hawaii-California Training and Testing Activities. The Office of Planning and Sustainable Development, CZM Program, is notifying you that we believe HCTT activities will have reasonably foreseeable coastal effects, and therefore, a Coastal Zone Management Act (CZMA) federal consistency determination is required to be submitted for review.

Environmental issues that need to be addressed in the HCTT EIS/OEIS include biological resources (including marine mammals and threatened and endangered species); sediments and water quality; air quality; noise, cultural resources; socioeconomic resources, and public health and safety. All these issues will be evaluated during the CZMA federal consistency review.

If you have any questions, please contact Debra Mendes of our CZM Program at [redacted] or [redacted].

Mahalo,

Mary Alice Evans

Mary Alice Evans
Interim Director

c: Ms. Dawn N.S. Chang, Department of Land and Natural Resources

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0221
March 31, 2025

Mrs. Mary Alice Evans
Director
Hawaii Office of Planning and Sustainable Development
P.O. Box 2359
Honolulu, HI 96804

Dear Mrs. Evans:

SUBJECT: CONSISTENCY DETERMINATION FOR PROPOSED MILITARY READINESS ACTIVITIES WITHIN HAWAII

In accordance with 15 C.F.R. §930, Subpart C for Consistency for federal agency activities, the U.S. Navy, Commander, U.S. Pacific Fleet is submitting the enclosed Consistency Determination (CD) for proposed military readiness activities within the Hawaii Study Area as proposed in the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). The CD (enclosure 1) documents the military's consistency with the applicable enforceable policies of the Hawaii Coastal Management Program, to the maximum extent practicable. Enclosure 2 is the completed Hawaii CZM Application and enclosure 3 is the completed Hawaii CZM Program Federal Consistency Assessment form. These military readiness activities are a continuation of activities that have been conducted in the same areas in Hawaii for decades and have been the subject of prior consistency reviews by the Office of Planning, most recently in 2018.

If you have any questions, please contact Mr. Alex Stone, U.S. Pacific Fleet, [redacted], [redacted] or Mr. Shawn Carrier, Commander Navy Region Hawaii, at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosures: 1. Consistency Determination for the Hawaii Study Area
2. Hawaii CZM Application Form
3. Hawaii CZM Program Federal Consistency Assessment Form

Copy to: (see next page)

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Ser N46/0221
March 31, 2025

Copy to:
Chief of Naval Operations (N4I) (w/o enclosure)
Commander, Navy Region Hawaii (w/o enclosure)

2

STATE OF HAWAIʻI
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

235 South Beretania Street, 6th Floor, Honolulu, Hawaiʻi 96813
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GOVERNOR

SYLVIA LUKE
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MARY ALICE EVANS
DIRECTOR

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Coastal Zone Management Program
Environmental Review Program
Land Use Commission
Land Use Division
Special Plans Branch
State Transit-Oriented Development
Statewide Geographic Information System
Statewide Sustainability Branch

DTS202505221251HE

May 27, 2025

Captain J.H. Beattie
Deputy Fleet Civil Engineer
Department of the Navy
United States Pacific Fleet
PACLFT/N46
250 Makalapa Drive
Pearl Harbor, Hawaiʻi 96860-3131

Attn.: Brian P. Whitehouse, PMP

Dear Captain J.H. Beattie:

Subject: Hawaiʻi Coastal Zone Management Program Federal Consistency Review for the Hawaiʻi-California Training and Testing Military Readiness Activities in the Hawaiʻi Range Complex

The Coastal Zone Management Act (CZMA) federal consistency determination for the "Hawaii-California Training and Testing" is currently under review by the Hawaiʻi Coastal Zone Management (CZM) Program. Due to the complexity of the review we hereby request, and will be taking, the mandatory 15-day extension of time in accordance with 15 CFR § 930.4l(b). The consistency determination was received by the Hawaiʻi CZM Program on April 1, 2025; therefore, the extended federal consistency review period will now conclude on June 16, 2025.

For any questions regarding this comment letter, please contact Joshua Hekekia at [redacted] or by email to [redacted].

Sincerely,

Mary Alice Evans

Mary Alice Evans,
Director

STATE OF HAWAIʻI
OFFICE OF PLANNING
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MARY ALICE EVANS
DIRECTOR

Coastal Zone Management Program
Environmental Review Program
Land Use Commission
Land Use Division
Special Plans Branch
State Transit-Oriented Development
Statewide Geographic Information System
Statewide Sustainability Program

DTS 202504021545HE

June 12, 2025

Captain J.H. Beattie
Deputy Fleet Civil Engineer
Department of the Navy
United States Pacific Fleet
PACFLT/N46
250 Makalapa Drive
JBPHH, Hawaiʻi 96860-3131

Attn.: Mr. Alex Stone/HCTT EIS/OEIS Project Manager
[redacted]

Subject: Hawaiʻi Coastal Zone Management Program Federal Consistency Review for Hawaiʻi-California Training and Testing Military Readiness Activities in the Hawaiʻi Range Complex

Dear Captain J.H. Beattie:

The Office of Planning and Sustainable Development (OPSD), Hawaiʻi Coastal Zone Management (CZM) Program, has completed its review of the Coastal Zone Management Act (CZMA) federal consistency determination by the United States Department of the Navy (Navy) (lead for Project Proponents[1]), for military readiness activities in the Hawaiʻi Range Complex associated with Hawaiʻi-California Training and Testing (HCTT).

The consistency determination was received by the Hawaiʻi CZM Program via email on April 1, 2025, and the federal consistency review period was extended on May 27, 2025, by fifteen days, in accordance with 15 CFR § 930.41(b), to conclude on June 16, 2025.

The proposed action is military readiness activities covered by this federal consistency review are described in the December 2024 HCTT Draft Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) and as follows:

[1] The other agencies involved in the Proposed Action, aside from the Navy, include the U.S. Coast Guard (USCG), U.S. Army (Army), and U.S. Air Force (USAF). The Navy is the lead agency. As the lead agency, it represents the Action Proponents.

- Military readiness activities, comprised of training, testing, and modernization and sustainment of military ranges, in the HCTT Study Area. A portion of the military readiness activities include the use of active sonar and explosives at sea off the coast of Hawai'i, and at select Navy pier side and harbor locations. The Navy's training and testing ranges provide the air, sea, and undersea space necessary for personnel to conduct live training and testing. Because of the changes in technology, weapons, and military systems that have evolved over time, the new capabilities require modifications to the military training ranges to allow for the full utilization of these technologies.

- A portion of the military readiness activities include the use of active sonar and explosives at sea off the coast of Hawai'i, and at select Navy pier side and harbor locations. The land components associated with the range complexes in the HCTT are not included in this review, however acoustic effects from missiles, targets, or artillery projectiles fired from the Pacific Missile Range Facility (PMRF) on the island of Kaua'i, are included due to the potential effect on pinnipeds hauled out on the coastline of PMRF.

- The military training and testing ranges will provide the air, sea, and undersea space necessary for military personnel to conduct live training and testing. This consistency determination considers changes in technology, weapons, and their evolving capabilities as part of the modernization of the Hawai'i Range naval weapon systems and the undersea areas.

According to the 2024 HCTT DEIS/OEIS NEPA document, the Training Component of this action involves readiness activities in the expanded HCTT Study to meet current and future training requirements. The Navy training activities that are being evaluated by this study are based on requirements of the Optimized Fleet Response Plan, as well as changing world events, advances in technology, and Navy tactical/strategic priorities. The training activities account for force structure changes and include training with new aircraft, vessels, unmanned/autonomous systems, and weapon systems that will be introduced to the fleets after December 2025.

Land-based activities in this HCTT study area are not included in this study area. However, the acoustic effects from missiles, targets, or artillery, in support of military readiness activities were evaluated. Additionally, Section 2.2, page 2-1 of the Navy's consistency determination, states: "Training and testing activities on Kaula Island are not part of this action, and the island is not included in the HCTT Study Area. Land-based training and testing activities at Kaula Island are covered under the PMRF Land Based Training EA, for which the Hawai'i Coastal Zone Management Program concurred on the *de minimis* notification put forth regarding Kaula Island. Kaula Island is outside the coastal zone and the Navy does not anticipate reasonably foreseeable coastal effects to the marine environment surrounding the island."

The Hawai'i CZM Program published a public notice of the federal consistency review on March 23, 2025, in the State Environmental Review Program publication, "The Environmental Notice." No public comments were received during the Hawai'i CZM Program comment period March 23, 2025 – April 7, 2025. No agency or public comments were received

during the public review period; however, we did receive comments from the State Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR) outside of this comment period on May 27, 2025. The comments from DAR were pertinent and vital and, in part, formed the basis of our conditional concurrence. We notified the Navy of the receipt of DAR's comment and provided them with a copy for their consideration and response.

The Hawai'i CZM Program conditionally concurs, with the Navy's determination that the conduct of HCTT military readiness activities in the Hawai'i Range Complex is consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program. Pursuant to 15 CFR § 930.32(a)(1), [t]he term consistent to the maximum extent practicable' means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency. The specific points of our consistency objection are explained below.

The following conditions shall apply to this consistency concurrence:

1. The proposed activity shall be carried out as represented in the CZM federal consistency application and determination. Any changes to the proposed activity shall be submitted to the Hawai'i CZM Program for review and approval. Changes to the proposed activity may require a full CZM federal consistency review, including publication of a public notice and provision for public review and comment. This condition is necessary to ensure that the proposed action is implemented as reviewed for consistency with the enforceable policies of the Hawai'i CZM Program. Hawai'i Revised Statutes (HRS) Chapter 205A Coastal Zone Management, is the federally approved enforceable policy of the Hawai'i CZM Program that applies to this condition.

2. The Hawai'i CZM Program finds the transport of undersea objects, without inspection, disinfection protocols, best management practices (BMPs), or related preventative measures on the spread of Aquatic Invasive Species (AIS), to be inconsistent with federally approved enforceable policies – HRS § 205A-2(a)(b)(4) Coastal Ecosystems, and 205A-2(a)(b)(10) Marine Resources. The moving of undersea objects, especially those that are located within the waters of Pearl Harbor, may lead to a rapid spread of AIS within our near-shore coastal environment. AIS often attach to objects resting underwater or along the ocean floor. Our partner agency, DAR expressed concern over the relocation of submerged objects that have been sitting in Pearl Harbor. In Section 2.2, Proposed Modernization and Sustainment of Ranges, the Navy's consistency determination speaks to the placement of the Mine Countermeasure Targets and placement of the Underwater Landing Platform (as depicted in Figure 2-6, page 2-8 of the Navy's consistency determination).

   DAR has concerns AIS may reside and infect sunken objects within the water of Pearl Harbor. If these submerged objects are moved to other locations without inspection and disinfection protocol, there is a risk of AIS spreading to other coastal locations within the territorial waters of Hawai'i.

In order to avoid unintended degradation of coral and live rocks prior to the transport and relocation of marine objects at Pearl Harbor, an evaluation process should be conducted to assess the feasibility of disinfection of undersea objects and disinfection protocols should be instituted to enact BMPs for the transportation and placement of objects like underwater platforms, mine countermeasures targets, and associated anchoring. Additionally, these protocols should evaluate the removal of cinder blocks from the marine environment after the exercises are complete. Our objection is necessary to ensure consistency with the Hawai'i CZM Program's federally approved enforceable policies on Coastal Ecosystems HRS §§ 205A-2(b)(4) and 205A(c)(4), Marine Resources HRS §§ 205A-2(b)(10) and 205A-2(c)(10), and HRS Chapter 187A - Aquatic Resources.

3. HCTT operations both in-air and in-water, for training and testing activities in the Hawai'i Range Complex, shall comply with the mitigation measures for protected terrestrial and marine species that were represented in the federal consistency determination found in Section 3.2.3.1 – Coastal Ecosystems and Section 3.2.3.2 – Marine and Coastal Resources which were included as supplemental information in support of the CZM consistency determination. This condition is necessary to ensure consistency with the Hawai'i CZM Program federally approved enforceable policies Hawai'i Revised Statutes (HRS) Chapter 195D Conservation of Aquatic Life, Wildlife, and Land Plants; and Hawai'i Administrative Rules (HAR) Chapter 13-124 Indigenous Wildlife, Endangered and Threatened Wildlife, and Introduced Wild Birds.

   As discussed in Section 3.2.3.3 – Consistency Review, pages 3-20 to 3-46 the protected species that this condition applies to include:

   Sea Turtles
   The Pacific Green Sea Turtle (Chelonia mydas) is listed as an endangered species under the Endangered Species Act (ESA). HAR Subchapter 3 § 13-124-11 lists the prohibited activities with respect to endangered and threatened species of wildlife.

   According to the Navy's consistency determination, Section 3.2.3.3.1, page 3-20, Sea Turtles, lists the stressors to sea turtles in the Hawai'i Study Area under the Proposed Action include, but not limited to: acoustic, explosive, and physical disturbance. Appendix C of the Navy's consistency determination contains an in-depth list of mitigation measures for acoustic stressors, weapon noise, and explosives on ocean reptiles such as Green Sea Turtles.

   HCTT operations shall avoid negative impacts on sea turtles with the mitigation measures found in Section 3.2.3.3.1, page 3-21. The Navy consistency determination states, "if a sea turtle is observed in the area while training or testing is active: HCTT participants must power down or cease sonar; cease air gun use; cease of non-explosive gunnery, missiles, rockets, or bombing activities; and cease explosive activities."

HCTT operations must also avoid sea turtles during vessel movement or towed in-water devices and avoid effects from explosives on seafloor resources. Injury or death to green sea turtles constitutes a "take" pursuant to HRS Chapter 195D and HAR Chapter 13-124.

Coral Reefs and Sensitive Habitats
Section 3.2.3.3.2 of the Navy's federal consistency determination addresses coral reefs and sensitive habitats within the Hawai'i Range. These marine ecosystem resources can be impacted by HCTT activities. Page 3-38 of the federal consistency determination provides mitigation measures that will be implemented by the Navy to limit the degradation of coral reef habitats. The Navy consistency determination states that within the Hawai'i Range, Naval vessels will not set anchor within the swing circle radius from shallow-water coral reefs and precious coral beds (except in designated areas) to ensure vessel anchors do not come into contact with these coral reefs.

HCTT operations must comply with these mitigation requirements, to the greatest extent practical, to limit damage to coral reefs and natural habitat areas. The applicable enforceable policies for this condition include: HRS Chapter 195D and HAR Chapter 13-124.

Marine Mammals
For military readiness activities, the Navy must abide, to the maximum extent practicable, with its mitigation protocols as they apply to endangered Marine Mammals within the Hawai'i Range. The key stressors and mitigation measures are listed in the Navy's consistency determination in Section 2.2.4.2, pages 2-18 and 2-19, Tables 2-6: Hawai'i Island Marine Mammal Mitigation Area; 2-7: Hawai'i 4-Islands Marine Mammal Mitigation Area; 2-8: Hawai'i Humpback Whale Special Reporting Mitigation Area Requirements; and 2-9: Hawai'i Humpback Whale Awareness Message Requirements, as well as Appendix C (mitigation).

Stressors such as acoustic, explosive, physical disturbances and strikes can lead to an avoidable "take" of these species during military readiness activities. Marine mammals, involved in this conditional concurrence include, but not limited to: Blainville's beaked whales, bottlenosed dolphins, goose-beaked whales, dwarf sperm whales, false killer whales, rough-toothed dolphins, short-finned pilot whales, and spinner dolphins; humpback whales; and Hawaiian monk seals. The applicable enforceable policies for this condition include: HRS Chapter 195D and HAR Chapter 13-124.

4. For military readiness activities, the Navy must abide, to the maximum extent practicable, its mitigation protocols as they apply to seabirds within the Hawai'i Range. In particular, the seabird habitats on Kaula Island are highly vulnerable to physical stressors associated with HCTT activities. Section 3.2.3.3.4, page 3-65, of the Navy's consistency determination provides Special Protections for Seabirds. These mitigation measures include a protocol to avoid large flocks of birds by aircrafts and divers in explosive mine countermeasures and neutralization activities in the Hawai'i Range

Complex.

The Navy consistency determination states, "mitigation will help avoid potential effects on concentrations of seabirds and birds that are able to forage underwater, as discussed in Appendix C (Mitigation); the Navy will cease explosive mine countermeasure and neutralization activities if concentrations of seabirds or individual foraging seabirds are observed in the mitigation zone; the Navy will not conduct gunnery activities within a specified distance of shallow-water coral reefs to avoid potential effects from explosives and physical disturbance and strike stressors on seafloor resources in mitigation areas throughout the Hawai'i Range Complex (see Appendix C, Mitigation). This mitigation will consequently help avoid potential effects on bird prey that inhabits coral reefs, live hard bottom, artificial reefs, and shipwrecks."

These special protections shall be implemented to the extent practical to limit impacts on marine avian life. The applicable enforceable policies for this condition include: HRS Chapter 195D and HAR Chapter 13-124.

If the requirements for conditional concurrences specified in 15 CFR § 930.4(a), (1) through (3), are not met, then all parties shall treat this conditional concurrence letter as an objection pursuant to 15 CFR Part 930, subpart C. The United States Department of the Navy shall immediately notify the Hawai'i CZM Program if the conditions are not acceptable in accordance with 15 CFR § 930.4(a)(2). Otherwise, acceptance of the conditions shall be presumed at the end of the 90-day federal consistency notification period on June 30, 2025.

The CZM conditional concurrence portion of this decision does not represent an endorsement of the proposed activity, nor does it convey approval with any other regulations administered by any state or county agency.

Thank you for your cooperation in complying with the Hawai'i CZM Program. If you have any questions, please contact Joshua Hekekia of our CZM Program at [redacted]. If you wish to respond to this comment letter, please include DTS 202504021545HE in the subject line.

Sincerely,

Mary Alice Evans

Mary Alice Evans,
Director

c: Brian "BPW" Whitehouse, PMP
Department of Health, Clean Water Branch
DLNR, State Historic Preservation Division

DLNR, Division of Aquatic Resources
DLNR, Division of Forestry and Wildlife
DLNR, Office of Conservation and Coastal Lands
Office of Hawaiian Affairs

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0505
July 3, 2025

Ms. Mary Alice Evans
Director, Office of Planning &
Sustainable Development
P.O. Box 2359
Honolulu, HI 96804

Dear Ms. Evans:

SUBJECT: CONSISTENCY DETERMINATION FOR PROPOSED MILITARY READINESS ACTIVITIES IN THE HAWAII RANGE COMPLEX

Thank you for the response to the Navy's Consistency Determination (CD) for at-sea military readiness activities under the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement (EIS). The Navy has reviewed the State of Hawaii's Office of Planning & Sustainable Development (hereinafter referred to as "OPSD") letter of June 12, 2025. In the letter you provided a conditional concurrence with the Navy's CD that determined the activities conducted within the Hawaii Coastal Zone Management (CZM) area are consistent to the maximum extent practicable with the enforceable policies of the Hawaii CZM Program.

The Navy appreciates the time your staff has taken to consult on the CD. The Navy maintains that the activities in the CD are consistent to the maximum extent practicable with Hawaii's enforceable policies under the Hawaii CZM Program. The conditions cited by OPSD will be abided by as they are already part of the proposed action and planned mitigation measures and do not require conditions to ensure the Navy's compliance under the applicable federal laws, including the Coastal Zone Management Act (CZMA). In hopes of reaching a consensus on this understanding, we request confirmation of the following information regarding the conditional concurrence.

The Hawaii CZM Program bases its conditional concurrence on the Navy complying with the following four conditions:

1. *The proposed activity shall be carried out as represented in the CZM federal consistency application and determination. Any changes to the proposed activity shall be submitted to the Hawai'i CZM Program for review and approval. Changes to the proposed activity may require a full CZM federal consistency review, including publication of a public notice and provision for public review and comment. This condition is necessary to ensure that the proposed action is implemented as reviewed for consistency with the enforceable policies of the Hawai'i CZM Program. Hawai'i Revised Statutes (HRS) Chapter 205A Coastal Zone Management, is the*

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federally approved enforceable policy of the Hawai'i CZM Program that applies to this condition.

REQUEST OPSD CLARIFICATION: The Navy acknowledges that if its proposed action were to change from that submitted under the CD, it would comply with the process of supplementing its CD under 15 C.F.R. section 930.46. Under the CZMA federal consistency process, the Navy is required to ensure actions are consistent with a state's federally approved coastal management program when those actions affect any coastal use or resource. Changes to the proposed activity that affect coastal use or resources would require the Navy, as appropriate, to submit said information to the Hawaii CZM Program for review. This is a general requirement for CZMA federal consistency compliance and thus should not be characterized as a condition.

2. *The Hawai'i CZM Program finds the transport of undersea objects, without inspection, disinfection protocols, best management practices (BMPs), or related preventative measures on the spread of Aquatic Invasive Species (AIS), to be inconsistent with federally approved enforceable policies – HRS § 205A-2(a)(b)(4) Coastal Ecosystems, and 205A-2(a)(b)(10) Marine Resources. The moving of undersea objects, especially those that are located within the waters of Pearl Harbor, may lead to a rapid spread of AIS within our near-shore coastal environment. AIS often attach to objects resting underwater or along the ocean floor. Our partner agency, Division of Aquatic Resources (DAR) expressed concern over the relocation of submerged objects that have been sitting in Pearl Harbor. In Section 2.2, Proposed Modernization and Sustainment of Ranges, the Navy's consistency determination speaks to the placement of the Mine Countermeasure Targets and placement of the Underwater Landing Platform (as depicted in Figure 2-6, page 2-8 of the Navy's consistency determination).*

DAR has concerns AIS may reside and infect sunken objects within the water of Pearl Harbor. If these submerged objects are moved to other locations without inspection and disinfection protocol, there is a risk of AIS spreading to other coastal locations within the territorial waters of Hawai'i.

In order to avoid unintended degradation of coral and live rocks prior to the transport and relocation of marine objects at Pearl Harbor, an evaluation process should be conducted to assess the feasibility of disinfection of undersea objects and disinfection protocols should be instituted to enact BMPs for the transportation and placement of objects like underwater platforms, mine countermeasures targets, and associated anchoring.

Additionally, these protocols should evaluate the removal of cinder blocks from the marine environment after the exercises are complete. Our objection is necessary to ensure consistency with the Hawai'i CZM Program's federally approved enforceable policies on Coastal Ecosystems HRS §§ 205A-2(b)(4) and 205A(c)(4), Marine Resources HRS §§ 205A-2(b)(10) and 205A-2(c)(10), and HRS Chapter 187A - Aquatic Resources.

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REQUEST OPSD CLARIFICATION: In response to your request for information during the consultation, on June 10, 2025 the Navy provided OPSD its BMPs for AIS. The Navy requests clarification whether this condition is seeking additional requirements to the BMPs already provided. As previously explained, the Navy will continue to implement the BMPs provided (and listed below) to minimize potential negative impacts by AIS in Pearl Harbor from any training or testing in Pearl Harbor:

a. All physical contact and disturbance to the benthos and any AIS present shall be prevented whenever possible.

b. Any equipment, gear, or material used in water with known AIS, shall be dried for 48 hours before moving to an uncontaminated area or cleaned prior to mobilization.

c. No movement/removal of benthos substrate, water, or AIS itself from a known AIS infested area to an uncontaminated area shall take place. Any removal of substrate or AIS shall be properly disposed of so that it cannot spread to uncontaminated areas.

d. In-water equipment will be locally sourced thus reducing the risk of introducing non-native species to the greatest extent practicable. If any equipment must be brought from outside the Hawaiian Islands region, then the appropriate prevention measures will be followed.

e. Do not disrupt on-going AIS removal efforts.

f. Visually inspect gear, wetsuits and boats after an underwater mission for coral fragments (don't return into the water).

g. Be aware of buoyancy so that gear is not dragging on reef organisms.

h. Boats used during training will comply with the no wake zone in the area where AIS is present in Pearl Harbor.

i. Maintain awareness about AIS distribution.

j. If AIS is observed, contact Navy Region Hawaii Environmental staff.

To address the concern about blocks used as anchors for mine countermeasure targets in Pearl Harbor, these anchor blocks are typically left in place on the seafloor after installation, unless they are part of a temporary range. However, as explained in the CD, the Navy anticipates the use of mine countermeasure targets specifically in Pearl Harbor to be temporary. The targets and anchor blocks would be removed and subjected to treatment under one or more of the above BMPs to the extent practicable after the activity is complete.

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As these BMPs are already included as part of our proposed action, the condition is not required for consistency with the enforceable policy cited.

3. *HCTT operations both in-air and in-water, for training and testing activities in the Hawai'i Range Complex, shall comply with the mitigation measures for protected terrestrial and marine species that were represented in the federal consistency determination found in Section 3.2.3.1 – Coastal Ecosystems and Section 3.2.3.2 – Marine and Coastal Resources which were included as supplemental information in support of the CZM consistency determination. This condition is necessary to ensure consistency with the Hawai'i CZM Program federally approved enforceable policies Hawai'i Revised Statutes (HRS) Chapter 195D Conservation of Aquatic Life, Wildlife, and Land Plants; and Hawai'i Administrative Rules (HAR) Chapter 13-124 Indigenous Wildlife, Endangered and Threatened Wildlife, and Introduced Wild Birds.*

As discussed in Section 3.2.3.3 – Consistency Review, pages 3-20 to 3-46 the protected species that this condition applies to include:

Sea Turtles
The Pacific Green Sea Turtle (Chelonia mydas) is listed as an endangered species under the Endangered Species Act (ESA). HAR Subchapter 3 § 13-124-11 lists the prohibited activities with respect to endangered and threatened species of wildlife.

According to the Navy's consistency determination, Section 3.2.3.3.1, page 3-20, Sea Turtles, lists the stressors to sea turtles in the Hawai'i Study Area under the Proposed Action include, but not limited to: acoustic, explosive, and physical disturbance.

Appendix C of the Navy's consistency determination contains an in-depth list of mitigation measures for acoustic stressors, weapon noise, and explosives on Green Sea Turtles.

HCTT operations shall avoid negative impacts on sea turtles with the mitigation measures found in Section 3.2.3.3.1, page 3-21. The Navy consistency determination states, "if a sea turtle is observed in the area while training or testing is active: HCTT participants must power down or cease sonar; cease air gun use; cease of non-explosive gunnery, missiles, rockets, or bombing activities; and cease explosive activities."

HCTT operations must also avoid sea turtles during vessel movement or towed in-water devices and avoid effects from explosives on seafloor resources. Injury or death to green sea turtles constitutes a "take" pursuant to HRS Chapter 195D and HAR Chapter 13-124.

REQUEST OPSD CLARIFICATION: As provided in the CD submitted to OPSD, the Navy has committed to employing extensive mitigation measures based on best available science to reduce the impact to sea turtles. For example, underway manned surface vessels will maneuver themselves (which may include reducing speed) to maintain distances as mission and circumstances allow from the vicinity of sea turtles. As described in Appendix C of the CD, the

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Navy has developed activity-based mitigation measures for many activities including those involving explosives, sonar, and non-explosive ordnance. These activity-based mitigations include the establishment of specific mitigation zones. If a protected species enters the mitigation zone (e.g.: 500 yards from the detonation site for Explosive Mine Neutralization activities (with divers)), the activity ceases until the animal is seen departing the area or the area has been clear for an established period of time. Additionally, geographic mitigation areas (although not specifically designed for sea turtles) would offer benefits to green and hawksbill sea turtles in particular since they prefer nearshore habitat by reducing the number of sonar hours that would occur in nearshore habitat within the 4-Islands geographic mitigation area. These mitigation measures would reduce or avoid impacts to sea turtles. That said, the Navy is consulting under the ESA with NMFS on incidental take of green sea turtles.

Please inform us if OPSD is requesting additional mitigation measures beyond those the Navy has already provided in the CD. As these mitigation measures are already commitments the Navy is making as part of the proposed action, the inclusion of the measures as a condition is not necessary for consistency with the enforceable policies cited.

Coral Reefs and Sensitive Habitats

Section 3.2.3.3.2 of the Navy's federal consistency determination addresses coral reefs and sensitive habitats within the Hawai'i Range. These marine ecosystem resources can be impacted by HCTT activities. Page 3-38 of the federal consistency determination provides mitigation measures that will be implemented by the Navy to limit the degradation of coral reef habitats. The Navy consistency determination states that within the Hawai'i Range, Naval vessels will not set anchor within the swing circle radius from shallow-water coral reefs and precious coral beds (except in designated areas) to ensure vessel anchors do not come into contact with these coral reefs.

HCTT operations must comply with these mitigation requirements, to the greatest extent practical, to limit damage to coral reefs and natural habitat areas. The applicable enforceable policies for this condition include: HRS Chapter 195D and HAR Chapter 13- 124.

REQUEST OPSD CLARIFICATION: As provided in the CD submitted to OPSD, the Navy has committed to employing extensive mitigation measures based on best available science to reduce the impact to coral reefs and sensitive habitats. Please inform us if OPSD is requesting additional mitigation measures beyond those the Navy has already provided in the CD. Otherwise, as the mitigation measures are already commitments the Navy is making as part of the proposed action, the inclusion of the measures as a condition is not necessary for consistency with the enforceable policies cited.

Marine Mammals

For military readiness activities, the Navy must abide, to the maximum extent practicable, with its mitigation protocols as they apply to endangered Marine Mammals within the Hawai'i Range. The key stressors and mitigation measures are listed in the Navy's

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consistency determination in Section 2.2.4.2, pages 2-18 and 2-19, Tables 2-6: Hawai'i Island Marine Mammal Mitigation Area; 2-7: Hawai'i 4-Islands Marine Mammal Mitigation Area; 2-8: Hawai'i Humpback Whale Special Reporting Mitigation Area Requirements; and 2-9: Hawai'i Humpback Whale Awareness Message Requirements, as well as Appendix C (mitigation).

Stressors such as acoustic, explosive, physical disturbances and strikes can lead to an avoidable "take" of these species during military readiness activities. Marine mammals, involved in this conditional concurrence include, but not limited to: Blainville's beaked whales, bottlenosed dolphins, goose-beaked whales, dwarf sperm whales, false killer whales, rough-toothed dolphins, short-finned pilot whales, and spinner dolphins; humpback whales; and Hawaiian monk seals. The applicable enforceable policies for this condition include: HRS Chapter 195D and HAR Chapter 13-124.

REQUEST OPSD CLARIFICATION: As provided in the CD submitted to OPSD, the Navy has committed to employing extensive mitigation measures based on best available science to reduce the impact to marine mammals. Please inform us if OPSD is requesting additional mitigation measures beyond those the Navy has already provided in the CD. Otherwise, as the mitigation measures are already commitments the Navy is making as part of the proposed action, the inclusion of the measures as a condition is not necessary for consistency with the enforceable policies cited.

4. *For military readiness activities, the Navy must abide, to the maximum extent practicable, its mitigation protocols as they apply to seabirds within the Hawai'i Range. In particular, the seabird habitats on Kaula Island are highly vulnerable to physical stressors associated with HCTT activities. Section 3.2.3.3.4, page 3-65, of the Navy's consistency determination provides Special Protections for Seabirds. These mitigation measures include a protocol to avoid large flocks of birds by aircrafts and divers in explosive mine countermeasures and neutralization activities in the Hawai'i Range Complex.*

The Navy consistency determination states, "mitigation will help avoid potential effects on concentrations of seabirds and birds that are able to forage underwater, as discussed in Appendix C (Mitigation); the Navy will cease explosive mine countermeasure and neutralization activities if concentrations of seabirds or individual foraging seabirds are observed in the mitigation zone; the Navy will not conduct gunnery activities within a specified distance of shallow-water coral reefs to avoid potential effects from explosives and physical disturbance and strike stressors on seafloor resources in mitigation areas throughout the Hawai'i Range Complex (see Appendix C, Mitigation). This mitigation will consequently help avoid potential effects on bird prey that inhabits coral reefs, live hard bottom, artificial reefs, and shipwrecks."

These special protections shall be implemented to the extent practical to limit impacts on marine avian life. The applicable enforceable policies for this condition include: HRS Chapter 195D and HAR Chapter 13-124.

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REQUEST OPSD CLARIFICATION: Military training conducted on Ka'ula Island is outside the scope of the proposed action. On September 16, 2024, as part of a separate Navy project, OPSD concurred that the Navy's activities on Ka'ula Island are *de minimis* and did not require further agency review. The Navy has continually provided seabird monitoring at Ka'ula with reports shared to OPSD, which was a prior condition committed to in past training and testing CZMA federal consistency reviews associated with the air to ground gunnery and bombing at Ka'ula using only inert ordnance. These reports can be found at https://www.navymarinespeciesmonitoring.us/reporting/pacific/.

As provided in the CD submitted to OPSD for HCTT activities, the Navy has committed to complying with the mitigation measures based on best available science to reduce the impact to seabirds. These mitigation measures include the establishment of a 600-yard or 2,100-yard mitigation zone for explosive mine countermeasure activities. Additionally, section C.7.1. of Appendix C of the CD describes the Navy's shallow-water coral reef mitigation measures and the 350-yard mitigation area. Please inform us if OPSD is requesting additional mitigation measures beyond those the Navy has already provided in the CD. Otherwise, as the mitigation measures are already commitments the Navy is making as part of the proposed action, the inclusion of the measures as a condition is not necessary for consistency with the enforceable policies cited.

In summary, should OPSD agree that no additional requirements are necessary beyond the planned BMPs and mitigation measures, the Navy respectfully requests reconsideration that the proposed military readiness activities in Hawaii are consistent to the maximum extent practicable with the enforceable policies of the Hawaii CZM Program without the inclusion of the conditions.

The Navy views its relationship with the State of Hawaii as essential to meeting its national security mandate, and we look forward to continuing our professional relationship.

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

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STATE OF HAWAIʻI
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARY ALICE EVANS
DIRECTOR

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Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: https://planning.hawaii.gov/

Coastal Zone Management Program
Environmental Review Program
Land Use Commission
Land Use Division
Special Plans Branch
State Transit-Oriented Development
Statewide Geographic Information System
Statewide Sustainability Program

DTS202508081021HE

September 5, 2025

Mr. J.H. Beattie
Captain, U.S. Navy
Deputy Fleet Civil Engineer
Department of the Navy
United States Pacific Fleet
PACLFT/N46
250 Makalapa Drive
Pearl Harbor, Hawaiʻi 96860-3131

Attn: Mr. Alex Stone/HCTT EIS/OEIS Project Manager
Alexander.m.stone6.civ@us.navy.mil

Subject: Hawaiʻi CZM Program Supplemental Consistency Determination and Clarification for the Proposed Hawaii-California Training and Testing Military Readiness Activities in the Hawaiʻi Range Complex

Dear Captain Beattie,

The Office of Planning and Sustainable Development (OPSD), Hawaiʻi Coastal Zone Management (CZM) Program is issuing this supplemental federal consistency decision letter for the proposed Hawaii-California Training and Testing (HCTT) Military Readiness Activities in the Hawaiʻi Complex (proposed activity). This letter supersedes the previous federal consistency decision issued on June 12, 2025, removing condition no. 4, and providing clarification to the conditions in response to the Navy's request (5090 Ser N46/0505) dated July 3, 2025.

The Hawaiʻi CZM Program has reviewed the Navy's Coastal Zone Management Act (CZMA) consistency determination for the proposed activity, that was received on April 1, 2025. This federal consistency review covers the military readiness activities, comprised of training, testing, and modernization and sustainment of ranges in the HCTT study area including active sonar and explosive at sea off the coast of Hawaiʻi, and select Navy pier and harbor locations.

The Hawaiʻi CZM Program published a public notice of the federal consistency review on March 23, 2025, in the State Environmental Review

Program publication, "The Environmental Notice." No public comments were received, however the State Department of Land and Natural Resources, Division of Aquatic Resources (DAR) provided comments.

The Hawai'i CZM Program identified comments from DAR that were considered essential for the CZMA federal consistency review and referred them to the Navy for response. Response to the comments were received from the Navy and coordination with DAR continues.

We conditionally concur with the Navy's determination that the proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program. The following conditions shall apply to this consistency concurrence:

1. The proposed activity shall be carried out as represented in the CZM federal consistency application and determination. Any changes to the proposed activity shall be submitted to the Hawai'i CZM Program for review and approval. Changes to the proposed activity may require a full CZM federal consistency review, including publication of public notice and provision for public review and comment. This condition is necessary to ensure that the proposed action is implemented as reviewed for consistency with the enforceable policies of the Hawai'i CZM Program. Hawai'i Revised Statutes (HRS) Chapter 205A Coastal Zone Management, is the federally approved enforceable policy of the Hawai'i CZM Program that applies to this condition.

   We appreciate the U.S. Navy's acknowledgment of the process under 15 CFR § 930.46. To ensure that the proposed action is implemented as reviewed by our program for consistency with the enforceable policies of the Hawai'i CZM Program this condition remains a part of this consistency determination. HRS Chapter 205A Coastal Zone Management is the federally approved enforceable policy of the Hawai'i CZM Program that applies to this condition.

2. In response to DAR comments regarding reducing the spread of aquatic invasive species (AIS), we understand that the Navy has an ongoing working group, with DAR as a member on marine resource management issues. One of the key topics is to develop appropriate best management practices (BMPs), mitigation measures, and monitoring protocols on aquatic invasive species (AIS). As consultation between the Navy and DAR continues, any adaptive mitigation measures to limit the spread of AIS, including the BMPs outlined in the Navy's federal consistency determination and any adaptive mitigation strategies developed in coordination with DAR, must be fully implemented. This condition is necessary to ensure consistency with the Hawai'i CZM Program's federally approved enforceable policies on Coastal Ecosystems HRS §§ 205A-2(b)(4) and 205A(c)(4), Marine Resources HRS §§ 205A-2(b)(10) and 205A-2(c)(10), and HRS Chapter 187A – Aquatic Resources.

3. The mitigation measures for protected terrestrial and marine species that were represented in the federal consistency determination (including Section 3.2.3.1 - Coastal Ecosystems, Section 3.2.3.2 - Marine and Coastal Resources, and Section 3.2.3.3.4 - Special Protections for Seabirds), which were included as supplemental information in support of the CZM consistency determination, shall be fully implemented. This condition is necessary to ensure consistency with the Hawai'i CZM Program federally approved enforceable policies HRS Chapter 195D Conservation of Aquatic Life, Wildlife, and Land Plants; and Hawai'i Administrative Rules Chapter 13-124 Indigenous Wildlife, Endangered and Threatened Wildlife, and Introduced Wild Birds.

4. Condition #4 has been removed, as its requirements are already addressed by the mitigation measures outlined in Condition #3.

OPSD Clarification Response

We trust that this clarifies our position from our consistency decision. The State of Hawai'i appreciates the Navy's stewardship and its willingness to be a partner in the management of natural resources within the Hawai'i Range Complex.

If the requirements for conditional concurrences specified in 15 CFR § 930.4(a), (1) through (3), are not met, then all parties shall treat this conditional concurrence letter as an objection pursuant to 15 CFR Part 930, subpart C. The U.S. Navy shall immediately notify the Hawai'i CZM Program if the conditions are not acceptable in accordance with 15 CFR § 930.4(a)(2). Otherwise, acceptance of the conditions shall be presumed.

This CZM consistency conditional concurrence does not represent an endorsement of the proposed activity, nor does it convey approval with any regulations administered by any state or county agency. Thank you for your cooperation in complying with the Hawaii CZM Program.

Sincerely,

Mary Alice Evans

Mary Alice Evans,
Director

c: Brian Whitehouse, PMP
Department of Health, Clean Water Branch
DLNR, State Historic Preservation Division
DLNR, Division of Aquatic Resources
DLNR, Office of Conservation and Coastal Lands
Office of Hawaiian Affairs

J.3 Endangered Species Act – National Marine Fisheries Service

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0694
October 7, 2024

Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
SSMC3, Room 13821
Silver Spring, MD 20910-3282

Dear Sir or Madam:

SUBJECT: REQUEST FOR INITIATION OF ENDANGERED SPECIES ACT SECTION 7 FORMAL CONSULTATION FOR COMMANDER, UNITED STATES PACIFIC FLEET TRAINING AND TESTING ACTIVITIES

In accordance with section 7 of the Endangered Species Act (ESA), the U.S. Navy requests initiation of formal consultation on Hawaii-California Training and Testing (HCTT) activities occurring within the Pacific Ocean off the coast of California and in the surrounding waters of the Hawaiian Islands.

The proposed action may affect listed species that reside within the HCTT Study Area by exposing them to sound and other environmental stressors associated with training and testing activities. The Biological Assessment (BA) is the Navy 's primary document that provides the required information pursuant to 50 C.F.R. §402.12(f). The U.S. Navy is requesting formal consultation on Alternative 1 within the HCTT Draft Environmental Impact Statement/ Overseas Environmental Impact Statement (EIS/OEIS).

The Navy is requesting formal consultation on ESA-listed species listed in the enclosure. In addition, the Navy is requesting a conference opinion on the sunflower sea star (*Pycnopdia helianthoides*), which is proposed for listing as a threatened species under the ESA (88 FR 16212 16 March 2023). The Navy is also aware critical habitat has been proposed for green sea turtles (*Chelonia mydas*) 88 FR 46572 19 July 2023 and is seeking a conference opinion regarding that proposed critical habitat.

Analysis supporting the application is contained within the HCTT BA and in the HCTT Draft EIS/OEIS. Due to the large file size and page count of the HCTT BA, the Navy will be electronically submitting the document directly to the appropriate National Marine Fisheries Service (NMFS) staff.

5090
Ser N46/0694
October 7, 2024

We appreciate your continued support in helping the U.S. Navy meet its environmental responsibilities. If there are any questions on this request, my point of contact is Mr. Chip Johnson. He may be reached via email at [redacted] or via phone at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: Status & Effect Determinations of ESA-listed Species and Critical Habitat for Hawaii-California Training and Testing Activities

Copy to: Mr. Ron Salz, NMFS Office of Protected Resources, F/PR5

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

Refer to NMFS No.: OPR-2024-03647

J. H. Beattie
Captain, U.S. Navy
Deputy Fleet Civil Engineer
Department of the Navy
U.S. Pacific Fleet
250 Makalapa Drive
Pearl Harbor, Hawaii 96860-3131

RE: Request for Consultation Pursuant to Section 7 of the Endangered Species Act on United States Navy Phase IV Hawaii-California Training and Testing Activities

Dear Mr. Beattie:

On October 9, 2024, the National Marine Fisheries Service (NMFS) received your request for formal consultation under the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 et seq.), for Hawaii-California Training and Testing activities proposed by the U. S. Navy, U.S. Army, U.S. Air Force and U.S. Coast Guard (hereafter, Action Proponents). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR §402, and agency guidance.

We have determined that the NMFS Permits and Conservation Division's proposed issuance of regulations in accordance with the Marine Mammal Protection Act (MMPA) to the Action Proponents for the take of marine mammals during military readiness activities in the Hawaii-California Training and Testing Study Area is interrelated and interdependent with the Action Proponents' proposed action. As such, section 7 consultation with the Action Proponents requires information on the proposed regulations from the Permits and Conservation Division to complete our analysis and prepare a biological and conference opinion. We received a request for formal consultation from the Permits and Conservation Division, along with the proposed regulations, on July 28, 2025.

Based on our review of the information submitted by the Action Proponents and NMFS Permits and Conservation Division, we determined that there is sufficient information to initiate formal section 7 consultation. We are initiating consultation as of July 28, 2025. During consultation, we may request additional information or clarification to assist us in completing this consultation.

The ESA requires that after initiation of formal consultation, the action agency not make any irreversible or irretrievable commitment of resources that would preclude the formulation or implementation of any reasonable and prudent alternatives that would avoid violating section

7(a)(2) (50 CFR §402.09). This prohibition is in force during the consultation process and continues until the requirements of section 7(a)(2) are satisfied.

We plan to finalize our biological and conference opinion prior to issuance of the MMPA regulations. If you have any questions, please contact Ron Salz at [redacted] by email at [redacted], or me at [redacted] or by email at [redacted].

Sincerely,

Tanya Dobrzynski
Chief, ESA Interagency Cooperation Division
Office of Protected Resources

cc: Chip Johnson
Ben Colbert
Neil Sheehan

J.4 Endangered Species Act – U.S. Fish and Wildlife Service

J.4.1 California

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0112
February 20, 2025

Mr. David Zoutendyk
Division Supervisor
U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Dear Mr. Zoutendyk:

SUBJECT: REQUEST FOR ENDANGERED SPECIES ACT SECTION 7 INFORMAL CONSULTATION FOR ACTIVITIES IN THE CALIFORNIA PORTION OF THE HAWAII-CALIFORNIA TRAINING AND TESTING ACTION AREA

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA), the U.S. Navy requests informal consultation on Hawaii-California Training and Testing (HCTT) activities occurring within the Pacific Ocean off the coast of California. The Navy requests concurrence that the proposed action may affect, but is not likely to adversely affect, the southern sea otter (*Enhydra lutris nereis*), the California least tern (*Sterna antillarum browni*), the marbled murrelet (*Brachyramphus marmoratus*), and the short-tailed albatross (*Phoebastria albatrus*).

The Navy is consulting separately with the Pacific Islands Fish and Wildlife Office for ESA-listed species within the Hawaii portion of the action area. Additionally, the Navy is consulting with the National Marine Fisheries Service for activities that may affect ESA-listed species under their jurisdiction.

We appreciate your continued support in helping the Navy meet our environmental responsibilities. Please direct any questions about this request to Ms. Kimberly O'Connor via email at [redacted] or via telephone at [redacted]

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: HCTT Biological Assessment for California (Provided Electronically)

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer to:
2025-0114722-S7-I-SD

July 28, 2025
Sent Electronically

Captain J.H. Beattie
Commander, U.S. Pacific Fleet
U.S. Department of the Navy
Deputy Fleet Engineer
250 Makalapa Drive
Pearl Harbor, Hawaii 96860-3131

Subject: Informal Section 7 Consultation for the U.S. Navy's Hawaii-California Training and Testing

Dear Captain Beattie:

This letter responds to your February 24, 2025, request for informal consultation on Hawaii-California Training and Testing (HCTT; "Phase IV"), and its effects on the federally endangered California least tern [*Sternula antillarum browni* (*Sterna a. b.*); least tern], short-tailed albatross (*Phoebastria albatrus*; albatross), marbled murrelet (*Brachyramphus marmoratus*; murrelet), and southern sea otter (*Enhydra lutris nereis*; sea otter) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq*.).

We previously consulted with you on comparable training activities that occurred over a smaller action area in southern California, including Hawaii-Southern California Training and Testing (HSTT) Phase II and HSTT Phase III. In these informal consultations we concurred with your determination that testing and training considered in southern California was not likely to adversely affect the least tern, albatross, and murrelet. The *Hawaii California Training and Testing Biological Assessment to Support Endangered Species Act Section 7 Informal Consultation with the U.S. Fish and Wildlife Service for Military Readiness Activities in the California Action Area* (Navy 2025, BA) incorporates the testing and training actions outlined in the HSTT Phase II and HSTT Phase III, but also includes new testing and training activities, changes in the frequency of ongoing testing and training activities, and an expanded action area. The BA also addresses the potential for impacts to the sea otter, because the expanded project footprint for HCTT includes ranges in central and northern California within the range of the sea otter.

HCTT includes actions within the waters of the southern California (SOCAL) Range Complex, the northern California (NOCAL) Range Complex, and the Point Mugu Sea Range (PMSR)

(Figure 1). HCTT also includes four amphibious approach areas (AAA 1–4) located in central and northern California (Figure 2). The HCTT operating and warning areas across the north-central Pacific Ocean lie within the jurisdiction of the U.S. Fish and Wildlife Service's (Service) Pacific Islands Fish and Wildlife Office, Carlsbad Fish and Wildlife Office (CFWO), Ventura Fish and Wildlife Office (VFWO) and Sacramento Fish and Wildlife Office (SFWO). This consultation addresses testing and training in California and offshore areas, whereas testing and training in Hawaii and offshore areas was consulted upon separately (Service 2025).

The SOCAL Range Complex includes several landside Navy installations as well as various air and sea ranges, including ocean "Operating Areas", and special use airspace (Figure 1). HCTT addresses training within waters of the SOCAL Range Complex, including seaside of Naval Base Point Loma, pier-side locations at Naval Base Point Loma, Naval Base Coronado, and Naval Base San Diego, instrumented underwater training ranges, mine training ranges, and laser training ranges. Activities that occur on land on San Clemente Island, Naval Base Coronado, and Naval Base Point Loma are not addressed in this consultation.

The PMSR is located in nearshore and offshore waters along the Pacific Coast of Central and Southern California (Figure 1) and includes 27,000 square nautical miles (nm^2) of air and sea space including 3 Restricted Areas and 11 Warning Areas. The PMSR test range also includes portions of Naval Base Ventura (NBV), Port Hueneme, and San Nicolas Island (SNI). PMSR supports training, testing, and evaluation of a wide variety of weapons, ships, aircraft, and specialized systems. Activities also include an amphibious approach lane to support amphibious landings at the Point Mugu recreational beach. Activities occurring on land on SNI, and NBV (i.e. including vehicles, personnel, or equipment employed ashore beyond the mean high-high tide line) are not addressed in this consultation and will require separate environmental planning and consultation.

The NOCAL Range Complex consists of two separate areas located offshore of central and northern California (Figure 1), one northwest of San Francisco and the other southwest of Monterey Bay. Each area includes special use airspace and the underlying sea space. The southern area includes approximately 10,000 nm^2 of airspace within Warning Area 283 (W283) and W285A/B/C/D. The northern area includes approximately 6,000 nm^2 of airspace within W260 and W513. Both components of the NOCAL Range Complex are located at least 12 nautical miles from shore and extend from the ocean surface to at least 45,000-foot (ft) altitude. W260, W283, and W513 have a ceiling of 60,000 ft. Three amphibious approach lanes also extend from the NOCAL Range Complex to the shore to facilitate amphibious training at these locations; however, vehicles, personnel, or equipment employed ashore beyond the mean high-high tide line are not addressed in this consultation and will require separate environmental planning and consultation.

HCTT will be implemented as described in Alternative 1 of the *HCTT Draft Environmental Impact Statement/Overseas Environmental Impact Statement* (Navy 2024). HCTT activities will occur throughout the year, and include active sonar, lasers, electromagnetic exercises, target

towing, underwater construction, radar, detonation of explosives, sonar maintenance, gunnery exercises, vessel transit, sonar testing, and anti-terrorism patrols. (Enclosure 1). Training platforms, weapons, and systems used in HCTT will generally be similar to those used for HSTT Phases II and III but will occur over a broader area. Training and testing will continue into the reasonably foreseeable future to meet military readiness requirements and will be re-evaluated every 7 years for renewal of the Navy's National Oceanic and Atmospheric Administration Fisheries Permits. The Navy has quantified the likely number and duration of annual training and testing cycles that could occur over each 5-year period to account for the fluctuation of cycles and deployment schedules and compared projected training to that identified in HSTT Phase III. We have incorporated the table outlining the training type, annual frequency, and location(s) (Enclosure 1). A detailed description of training activities is presented in the BA.

As noted above, although some testing and training activities may include terrestrial—as well as in-water—actions, the HCTT addresses only the in-water components of proposed testing and training. To ensure that actions are fully considered under Endangered Species Act consultation and other environmental review processes, the Navy has—or will—conduct separate environmental analysis of terrestrial components of training. For example, in southern California, changes in training and testing associated with HCTT (e.g. increased frequency of amphibious activities, new activities) that may affect federally listed species at San Clemente Island, Silver Strand Training Complex Naval Base Coronado, and Naval Base Point Loma will be addressed by amendments to previously completed biological opinions [e.g. FWS-LA-09B0027-09F0040 (Service, 2008) and FWS-SDG-8B0503-09F0517 (Service 2010), and FWS-SD-19B0218-21I0835 (Service 2021)], if necessary (Booker 2018, pers. comm.). Within central California, HCTT actions that include a terrestrial component (e.g. amphibious landings and associated exercises) have not been reviewed for potential effects to federally listed threatened and endangered species. Since the potential effects of terrestrial activities will not be considered in this HCTT consultation, terrestrial components of the testing and training activities identified in HCTT at NOCAL Range Complex and PMSR (e.g. amphibious landings) must undergo additional environmental review, including consultation under section 7 of the Endangered Species Act, prior to implementation.

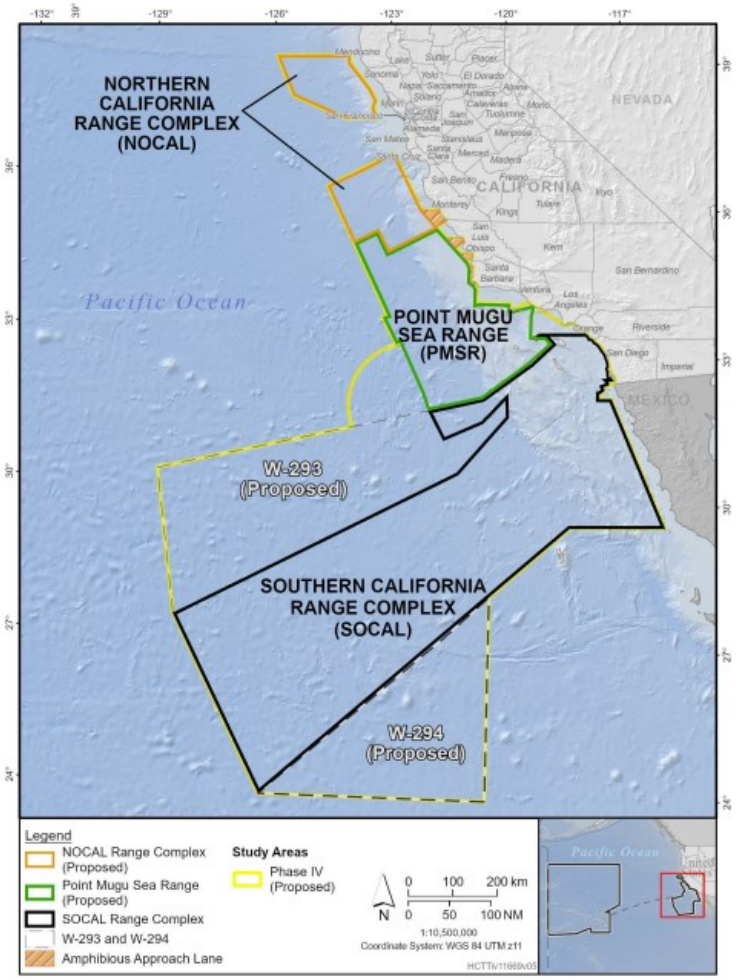


Figure 1. HCTT Action Area.

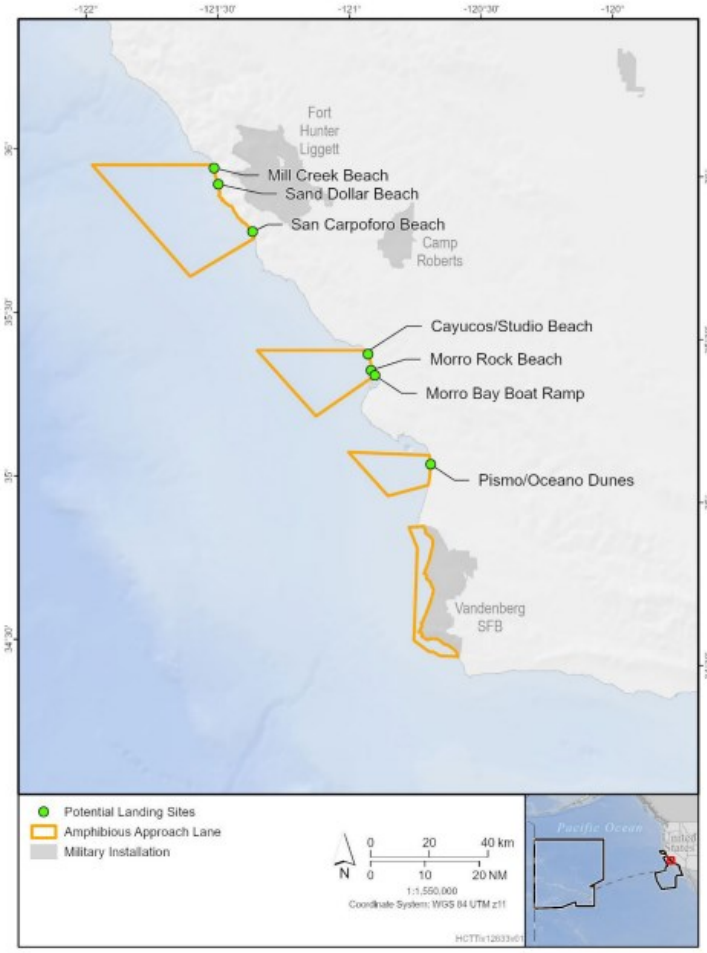


Figure 2. Amphibious Approach Lanes.

Conservation Measures

The Navy has developed "Standard Operating Procedures" and "Minimization Measures" to provide for safety and mission success and to avoid impacts to marine wildlife, with a focus on sea turtles and marine mammals. These measures may also provide a benefit to federally listed avian species and are recognized by the Navy as Conservation Measures (CMs), incorporated herein by reference, collectively, as CM 7, below. In addition, the Navy will implement CMs 1–6

to avoid adverse effects to listed species associated with HCTT activities in waters off the coast of California:

CM 1. Boats associated with amphibious training activities and amphibious landing craft will avoid kelp beds to the maximum extent practicable to reduce potential for collisions with sea otters. "To the maximum extent practicable" here is defined as allowing "some flexibility and decision making to the vessel's commanding officer in a very limited set of unusual, unforeseen circumstances such as: a safety issue (for example, a man overboard); avoiding a collision; or when there is limited ability to maneuver, a mechanical failure, or a loss of buoyancy, steering, or power" (O'Connor 2025, pers. comm.).

CM 2. When operating in the vicinity of Mill Creek Beach near Lucia, California, and Vandenberg Boathouse Basin at Vandenberg Space Force Base (historically Point Arguello Coast Guard Rescue Station), boats associated with amphibious training activities and amphibious landing craft will not exceed 10 knots in water depths less than 25 meters.

CM 3. One or more lookouts will be used on manned underway surface vessels in accordance with the most recent navigation safety instruction, and when operating in water depths less than 25 meters, will actively look for seabirds and southern sea otters that may be resting on the water surface.

CM 4. Manned underway surface vessels will maintain a minimum 200-yard buffer from marine mammals as mission and circumstances allow and will be maneuvered to maintain this buffer distance. Maneuvering may include reducing speed.

CM 5. For training exercises that use underwater explosives and multiple detonations at Silver Strand Training Complex, the second (or third, etc.) detonation will be timed as follows: the second detonation will occur either immediately after the preceding detonation (i.e., within 10 seconds of the preceding detonation), or after 30 minutes have passed. This measure is intended to reduce the potential impacts to any piscivorous (fish-eating) birds, including least terns and pelicans (*Pelecanus occidentalis*), that forage in ocean waters and/or are attracted by stunned fish within the sphere of influence of the detonation.

CM 6. For training exercises that use underwater explosives in water depths of less than 13 fathoms at Silver Strand Training Complex, a safety buffer zone [396.2 m (1,300 ft) radius for detonations occurring in 0 to 4 fathoms of water and 670.6 m (2,220 ft) radius for detonations in 4 to 12 fathoms of water] will be established around each detonation point. Assigned personnel will be trained to survey the safety buffer zone for birds prior to the detonation event. One trained lookout on shore will use binoculars to survey the detonation area and safety buffer zone for seabirds prior to and after detonations in 0 to 4 fathoms of water. Trained

lookout(s) in small boats (one for 0 to 4 fathoms and two for 4 to 12 fathoms) will also use binoculars to survey the detonation area and safety buffer zone to detect any seabirds prior to the detonation event and until at least 30 minutes after each detonation. The lookouts will be allowed adequate time to effectively survey the safety buffer zone.

Safety buffer zones encompass a large area [49-hectare (ha)/122-acre (ac)for detonations occurring in 0 to 4 fathoms of water and 141-ha/349-ac area for detonations in 4 to 12 fathoms of water], and the Navy will determine the length of time necessary to adequately survey this area for seabirds prior to detonation. If flocks of birds or individual foraging birds are sighted within the buffer zone or moving towards it, activities will be suspended until the birds voluntarily leave the area. Immediately following the detonation, visual monitoring for birds within the buffer zone will take place for 30 minutes. Observations will be made for animals that have been injured or killed. If animals are detected that have been injured or killed, report will be made to the Commander Navy Region Southwest Environmental Director and the Navy Pacific Fleet Environmental Office. The Naval Base Coronado Wildlife Biologist will also be notified.

CM 7. The Navy will implement Standard Operating Procedures and Activity-Based Mitigation Measures (Enclosure 2) that will include lookouts, lighting considerations, collection of expended materials, speed limits, etc. that will contribute to avoidance of wildlife, and thereby reduce the potential for exposure of listed species to stressors and impacts associated with testing and training.

California Least Tern

The least tern is a small migratory seabird, which nests at coastal sites in California, United States, and Baja California, Mexico. They forage in bays, estuaries, and the nearshore and offshore waters of the Pacific Ocean. To obtain prey (small-narrow bodied fish), least terns hover above, and then dive into the top few feet of the water surface, spending little time underwater. After the nesting season, least terns migrate to the south, likely wintering off the coast of southern Mexico and Central America (Service 2020). The least tern is present within the action area primarily in nearshore waters (less than 1.5 mile) off the coast of California between the U.S/Mexico Border and San Francisco Bay, San Diego Bay, Mugu Lagoon, and in offshore upwelling areas such as Nine Mile Bank and Colorado Canyon up to 14 miles offshore in the Pacific Ocean (Baird 2010). Least terns may forage or rest on the bay and/or ocean surface in these areas. Their presence in specific areas is intermittent and dependent upon the location and availability of prey, however they occur at higher frequencies close to nesting sites, including sites at Silver Strand Training Complex and Camp Pendleton during the breeding season.

HCTT could result in adverse effects to least terns that are exposed to testing and training activities as a result of acoustic impacts (both under and above the water); impacts from explosives and energy generating equipment (e.g. electromagnetic generator or laser); ingestion

or entanglement in materials left in the water after training activities (e.g. parachutes, cables, expended rounds); and collisions with vessels and planes. However, most HCTT activities will occur offshore where least terns occur at low frequency, and in these offshore areas it is unlikely that least terns will be exposed to stressors associated with HCTT due to the low frequency of least terns and the widely dispersed, temporary, and intermittent nature of the HCTT activities.

The least tern is present in higher frequency in the near-shore waters adjacent to occupied nesting sites within the action area, including Naval Base Coronado, Naval Base Point Loma, Naval Base Ventura, and Vandenberg Space Station. Within these areas, least terns have greater potential for stressors associated with acoustic impacts, impacts from explosives, and collisions with vessels. The Navy will minimize the potential for impacts to least terns by implementing conservation measures to reduce the potential for exposure to nearshore underwater demolition activities (CMs 5, 6) as well as minimization measures outlined in the Navy's "Standard Operating Procedures" and "Activity-Based Minimization Measures" (CM 7; Enclosure 2) to reduce the potential for impacts. The Navy will also continue to consult with the Service on training activities that may include amphibious activities at Silver Strand Training Complex, Marine Corps Base Camp Pendleton, Naval Base Point Loma, Naval Base San Diego, and Naval Base Ventura to identify—where appropriate—conservation measures at the local scale. With implementation of the Standard Operating Procedures, Conservation Measures, and, where necessary, additional conservation measures at the local scale, potential effects to least terns are anticipated to be insignificant.

It is possible that least terns could be exposed to sonar in the vicinity of San Diego Bay, however least terns are only briefly submerged while foraging; therefore, they are unlikely to be exposed to underwater sound. Therefore, the effects from underwater active acoustic sources are considered insignificant.

Pile driving in Port Hueneme has the potential disrupt nesting or foraging least terns. However, the training areas for pile driving are located greater than 1 mile from least tern nesting areas at Hollywood Beach and Ormond Beach, so we anticipate impacts to nesting to be discountable. In addition, pile driving would occur infrequently, and depending upon training needs, might not occur during the nesting season every year. In addition, the annual pile driving training would occur over 12 days in one 30-day window each year, and daily disruption associated with pile driving would be limited to less than 90 minutes each day. Although pile driving may temporarily alter least tern foraging activity, least tern foraging is not frequently observed in Port Hueneme harbor (Ruane 2025, pers. comm.), and we anticipate impacts to least terns to be insignificant.

Short-tailed Albatross

The albatross is a seabird that spends most of its life at sea, and ranges throughout the North Pacific Ocean. Short-tailed albatross nest in two currently extant colonies: Torishima Island, Japan; and Minami-kojima in the Senkaku Islands off Taiwan. An estimated 12 percent of the population occurs annually within the California Current System, the majority of which are males and juveniles (Suryan *et al.* 2008), however only 14 observations of short-tailed albatross

have been reported in southern California since 2005 (Navy 2017). When feeding, albatross alight upon the ocean surface and seize their prey, including squid, fish, and shrimp.

HCTT could result in adverse effects to the albatross, particularly if vessels or aircraft are close to short-tailed albatross during training, testing, or transit (Navy 2025). HCTT activities could result in vessel collisions with albatross, or impacts from explosives or energy generating equipment; however, due to the widely dispersed, temporary, and intermittent nature of the HCTT activities, and the low frequency of the albatross within the HCTT action area, we consider such effects, possible, but unlikely to occur (discountable). In addition, the Navy will implement Standard Operating Procedures and Minimization Measures that are expected to further reduce the potential for impacts (CM 7; Enclosure 2). Although the use of sonar has the potential to result in acoustic impacts, albatross are unlikely to be exposed to underwater sound from sonar because they do not submerge while foraging.

Testing and training activities also result in a significant volume (e.g. hundreds of thousands) of expended materials (e.g. projectiles, missiles, rockets, parachutes, casings) being discharged into the ocean each year (Navy 2025). Albatross alight on the ocean surface to obtain prey and are known to ingest plastic materials that they mistake as food (Donnelly-Greenan *et al*. 2018). Thus, they may ingest expended materials, particularly if material remains floating or high in the water column. Short-tailed albatross appear to consume white fragments over more brightly colored fragments (Donnelly-Greenan *et al*. 2018). They are also vulnerable to entanglement, particularly if apparatus such as parachutes remain on the ocean surface. The Navy evaluated the potential for ingestion of expended materials and concluded that the shape and size of materials, and propensity of most materials to sink, reduced the likelihood that albatross would become entangled in or consume expended materials (Navy 2025). The Navy will further reduce the potential for ingestions by collecting as much expended material as possible after testing and training exercises (CM 7; Enclosure 2). Based on the Navy's commitment to retrieving expended materials, and the anticipation that most materials would quickly sink, the potential for impacts to short-tailed albatross appear insignificant.

Marbled Murrelet

The murrelet is a small seabird native to coastal environments along the Pacific Coast from California to the Aleutian Islands, U.S. (Nelson 2020). Murrelets are long-lived seabirds that spend most of their lives in the marine environment but use old-growth forests for nesting (Nelson 2020). In the contiguous United States, murrelets forage year-round in nearshore and offshore waters from northern Washington to southern California (Nelson 1997). During the breeding season (in California, 24 March through 15 September), most murrelets are found in nearshore oceanic waters (generally, within 3–5 miles of the coast) adjacent to inland nesting locations (Nelson 1997). During the non-breeding season, murrelets disperse along the coast and can be found farther from shore (Strachan *et al*. 1995). Some wintering birds occur as far south as northern Baja California, Mexico (Nelson 1997). Murrelets are wing-propelled pursuit divers that forage both during the day and at night (Strachan *et al*. 1995). Primarily due to the loss of nesting habitat due to widespread industrial timber harvest, the Service listed the marbled

murrelet as a threatened species in Washington, Oregon, and California, on October 1, 1992 (Service 1992).

HCTT testing and training has the potential to result in adverse effects to murrelet if murrelets are present in the vicinity of testing and training activities. The potential impacts include: acoustic impacts (both under and above the water); impacts from explosives and energy generating equipment (e.g. electromagnetic generator or laser); ingestion or entanglement in materials left in the water after training activities (e.g. parachutes, cables, expended rounds); and collisions with vessels and planes. The potential for murrelets to be exposed to training impacts is low, however, because of their low frequency in the southern California area and off-shore waters where most HCTT activities occur. The murrelet has greater potential for exposure to training activities in the amphibious approach lanes in central California, which extend to shore in areas that may support higher concentrations of murrelets. Activities in amphibious approach lanes are limited to transit of amphibious vehicles and boats that support amphibious operations. Amphibious vehicles such as the Landing Craft Utility Vehicles and Amphibious Combat Vehicles travel at speeds of less than 8 knots, so it is unlikely that they would collide with murrelets. Although it is possible that HCTT activities could result vessel collisions in the amphibious approach lanes, the temporary, and intermittent nature of the amphibious vehicle activities, low speed of amphibious vehicles, and dispersed and dynamic presents of murrelets within the amphibious approach lanes, makes impacts unlikely, so the effects would be considered discountable.

Southern Sea Otter

The sea otter is the smallest marine mammal in North America and is found in shallow waters along the coast of central and southern California from the Half Moon Bay area at Pigeon Point southward to approximately Santa Barbara, California and in the waters off San Nicolas Island. Sea otter abundance varies across the range, with the highest densities occurring in the center of their coastal range (Seaside to Cayucos). They spend their entire lives in the marine environment, obtaining food, giving birth, grooming, playing and resting entirely in the ocean. Sea otter habitat is typically defined by the 40 m (131 ft) depth contour (Riedman and Estes 1990) and most sea otters in California reside within 1.2 miles of the shore. Southern sea otters use rocky, kelp-dominated areas, which maintain the most stable sea otter densities from year to year, as well as sandy and soft-bottom habitats, which are more variable in abundance from year to year (Tinker *et al*. 2008). Rocky kelp-dominated areas are occupied by males, females and dependent pups, whereas sandy and soft-bottom habitats (particularly those in Monterey Bay, Estero Bay, and from Pismo Beach to Pt. Sal), are typically occupied by non-territorial males and sub-adult animals of both sexes. Southern sea otters forage in both rocky and soft-sediment communities in water depths generally 25 m (82 ft) or less, although some animals utilize deeper waters. Feeding dives (about 95 percent) occur in waters less than 40 m (131 ft) in depth (Tinker *et al*. 2006a), with most foraging at less than 25 m in depth. Occasionally, however, sea otters make dives of up to 100 m (328 ft). Feeding dives are generally only a few minutes in duration, although dives over 4 minutes in duration have been reported. Dive depth and dive pattern vary by sex, geographic location, and diet specialization (Tinker *et al*. 2006a, Tinker *et al*. 2007), as well as age and reproductive status (Tinker *et al*. 2013b). Males tend to make dives greater than 25 m

more frequently than females. Sea otters also spend a significant part of each 24-hour period motionless and asleep on the water surface.

HCTT testing and training could result in impacts to sea otters, however, spatial overlap between most military readiness activities is unlikely, because most testing and training occurs farther offshore than sea otter habitat. Most activities that could result in acoustic, explosive, energy, entanglement, ingestion, and expended material stressors would occur outside sea otter habitat. The four proposed amphibious approach lanes, however, overlap with sea otter habitat, and adverse effects to sea otters could occur within these areas if Navy vessels are in use in sea otter habitat (Navy 2025). Within the amphibious approach lanes, there is a risk of impacting kelp that supports sea otters, modifying sea otter behavior as a result of noise or visual stimuli, or injuring a sea otter during a collision. The potential for effects is minimized by: 1) the low frequency of use proposed for the amphibious approach lanes (i.e. four times per year spread throughout the four amphibious approach lanes in NOCAL) (Navy 2025), and 2) the short duration of each exercise (i.e. 1–2 days per exercise, which limits the chances of encountering southern sea otters). The speed and design features of some amphibious vessels that would be used further limit the potential for collision. For example, Landing Craft Utility Vehicles and Amphibious Combat Vehicles move at speeds of less than 8-knots and both lack exposed propellers that could inflict injury/harm to sea otters. In addition, the Navy has committed to implementing additional measures (CM 1, CM 2, CM 3) to further avoid adverse effects and vessel strikes of southern sea otters.

Conservation Recommendations

The Navy has developed "Activity-Based" Mitigation Measures (Enclosure 2) to avoid or reduce potential impacts from acoustic, explosive, physical disturbance, and strike stressors primarily to protect marine mammals and sea turtles. These measures rely on lookouts and avoidance procedures to reduce the overlap of target species in real time with training-related stressors that could cause injury or mortality. Although there may be some ancillary benefit to the sea otter, least tern, murrelet, or albatross, the likelihood of benefit to these species would be increased if lookouts were instructed to include "seabirds" (or the individual species, if possible) as target species for avoidance. For example, we recommend that lookouts be trained to recognize seabirds, particularly listed seabirds such as murrelet, least tern, and albatross, and "seabirds" be added as a consideration under the column for "Mitigation Requirement Timing" in Table 2-12 of the BA.

Testing and training activities result in significant deposition of expended materials into ocean waters. We recommend that the Navy strive to remove expended materials from the water's surface prior from departing from the area of a training event and consider the color of materials used to reduce their attractiveness to albatross and other seabirds. For example, albatross appear to consume white colored debris at a higher rate than some other colors (using projectiles, etc. that produce fragments or debris that are less attractive colors may aid in reducing the potential for ingestion for particles that are not retrievable.

Conclusion

In summary, the albatross, least tern, and murrelet occur in waters within the offshore areas of the HCTT action area at low frequencies. HCTT activities could result in an adverse effect to these species, however due to the widely dispersed, temporary, and intermittent nature of the HCTT activities, Conservation Measures and the low frequency of these species within the HCTT action area, we consider such effects possible, but unlikely to occur. In addition, the Navy will implement "Standard Operating Procedures" and "Activity Based Mitigation Measures" which may provide some ancillary benefit to listed seabirds. Based on these considerations, we concur with the Navy's determination that the HCTT training activities may affect but are not likely to adversely affect these listed seabirds. We do recommend that the Navy identify the seabirds as target species for "Activity Based Mitigation Measures" as outlined in the BA.

The sea otter occurs in nearshore waters off the coast of Central California within the HCTT action area. HCTT activities could result in an adverse effect to this species, however the sea otter is unlikely to be exposed to most testing and training activities, since these activities occur offshore beyond the range of the sea otter, and the Navy will implement Conservation Measures in the nearshore environment to avoid vessel collision that could lead to injury or death of sea otters. Therefore, we concur with the Navy's determination that implementation of the HCTT may affect but is not likely to adversely affect the listed seabirds

Based on the above assessment, we concur with the Navy's determination that HCTT is not likely to adversely affect the least tern, short-tailed albatross, marbled murrelet, and southern sea otter. We appreciate the Navy's continued commitment to stewardship and avoidance of impacts to sensitive plants and wildlife.

Sincerely,

Jonathan Snyder
Acting Field Supervisor

Enclosures

cc:
Kim O'Connor, U.S. Department of the Navy, Commander, U.S. Pacific Fleet
Aaron Nadig, Honolulu Fish and Wildlife Office
Mark Elvin, Ventura Fish and Wildlife Office
Arwen Freeman, Sacramento Fish and Wildlife
Karen Sinclair, Ventura Fish and Wildlife Office

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J.4.2 Hawaii

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0113
February 20, 2025

Dr. Earl Campbell
Project Leader
U.S. Fish Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Blvd., Suite 3-122
Honolulu, HI 96850

Dear Dr. Campbell:

SUBJECT: REQUEST FOR ENDANGERED SPECIES ACT SECTION 7 INFORMAL CONSULTATION FOR ACTIVITIES IN THE HAWAII PORTION OF THE HAWAII-CALIFORNIA TRAINING AND TESTING ACTION AREA

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA), the U.S. Navy requests informal consultation on Hawaii-California Training and Testing (HCTT) activities occurring within the Pacific Ocean off the coast of the State of Hawaii and focused mainly around the islands of Kauai, Oahu, and Maui. The Navy requests concurrence that the proposed action may affect, but is not likely to adversely affect, the Hawaiian petrel (*Pterodroma sandwichensis*), the short-tailed albatross (*Phoebastria albatrus*), the Newell's shearwater (*Puffinus auricularis newelli*), and the Hawaii Distinct Population Segment of the band-rumped storm-petrel (*Oceanodroma hydrobates castro*).

The Navy is consulting separately with the Carlsbad Fish and Wildlife Office for ESA-listed species within the California portion of the action area. Additionally, the Navy is consulting with the National Marine Fisheries Service for activities that may affect ESA-listed species under their jurisdiction.

We appreciate your continued support in helping the Navy meet our environmental responsibilities. Please direct any questions about this request to Ms. Kimberly O'Connor via email at [redacted] or via telephone at ([redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: HCTT Biological Assessment for Hawaii (Provided Electronically)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
2025-0078469

April 16, 2025

J.H. Beattie
Captain, U.S. Navy
Deputy Fleet Civil Engineer
United States Pacific Fleet
250 Makalapa Drive
Pearl Harbor, Hawai'i 96860-3131

Subject: Informal Consultation for the Hawai'i-California Training and Testing for Military Readiness Activities in the Hawai'i Action Area

Dear Captain Beattie,
The U.S. Fish and Wildlife Service (Service) received your letter on February 27, 2025 requesting our concurrence with your determination that the proposed Hawai'i-California Training and Testing for Military Readiness Activities in the Hawai'i Action Area may affect, but is not likely to adversely affect the endangered Hawai'i distinct population segment (DPS) of band-rumped storm petrel or 'akē'akē (*Hydrobates castro*), the endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*), the threatened Newell's Townsend's shearwater or 'a'o (*Puffinus auricularis newelli*), and the endangered short-tailed albatross (*Phoebastria albatrus*) (hereafter collectively referred to as Hawaiian seabirds). The Service considered all information related to the proposed project received on February 27, 2025, initiating consultation.

The findings and recommendations in this consultation are based on (1) your biological assessment; and (2) other information available to us. A complete administrative record is on file in our Pacific Islands Fish and Wildlife Office in Honolulu, Hawai'i. This response is in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.).

Project Description

The United States (U.S.) Department of the Navy (Navy) (including both the U.S. Navy and the U.S. Marine Corps [USMC]) jointly with the U.S. Coast Guard (USCG), U.S. Army (Army), and U.S. Air Force (USAF) (the Action Proponents), proposes to conduct at-sea military readiness activities in the Hawai'i portion of the Hawai'i-California Training and Testing (HCTT) Study

Area. Military readiness activities are comprised of (1) training, (2) testing, and (3) modernization and sustainment of ranges necessary to support these training and testing activities. Training and testing activities can include the use of active sonar and other acoustic sources (air guns, weapons noise, vessel noise, and aircraft noise), as well as the use of explosives and aircraft strikes. The Hawai'i portion of the Action Area (also referred to as the Hawai'i Action Area) includes the waters of the Pacific Ocean around the Hawaiian Islands, Navy pierside locations, within port transit channels and near civilian ports, and inshore waterways (e.g., Pearl Harbor) (Figures 1 and 2). The Action Area includes only the at-sea components of these areas. These military readiness activities are representative of training and testing that the Action Proponents have been conducting in the HCTT Action Area for decades.

The proposed activities are categorized into functional warfare called primary mission areas. The testing community has three additional categories of activities for vessel evaluation, unmanned systems, and acoustic and oceanographic science and technology. The seven primary mission areas include:

- Air warfare
- Amphibious warfare
- Anti-submarine warfare
- Electronic warfare
- Expeditionary warfare
- Mine warfare
- Surface warfare

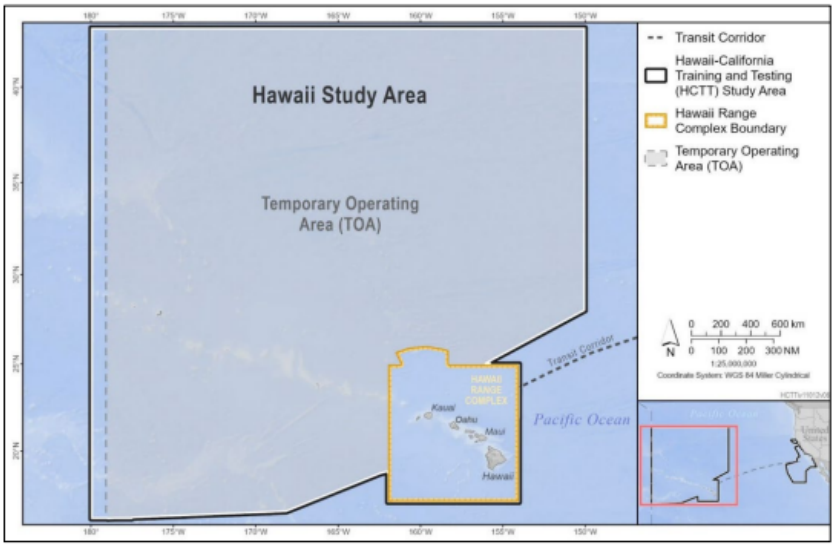


Figure 1. Hawai'i Action Area for proposed HCTT activities.

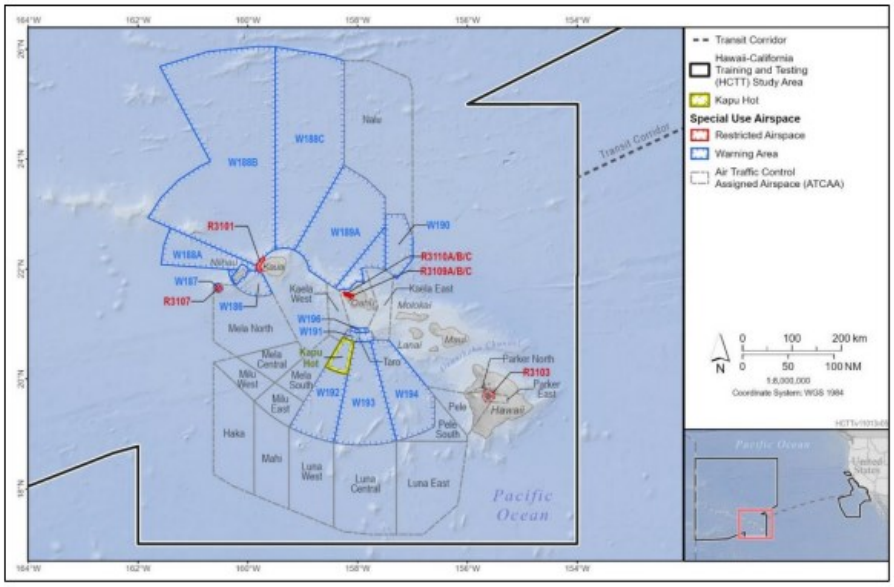


Figure 2. The Hawai'i Range Complex.

Conservation Measures

The following conservation measures will be implemented as a part of the proposed project to avoid and minimize impacts to listed species and their habitats.

Hawaiian seabirds

- Vessels are required at all times to operate at a safe speed so proper and effective action can be taken to avoid collision. This may involve adjusting speeds during periods of reduced visibility or in certain locations.
- The Navy will comply with the "Darken Ships Bill," such that no white lights shall be visible from outside the ship.
- Any lighting associated with the Proposed Action would be directed downward to minimize the illumination of surrounding areas.
- Laser systems are approved for fielding by the Action Proponents' Laser Safety Review Board or equivalent.
- Only properly trained and authorized personnel operate high-energy lasers within designated areas.
- Most weapons-firing activities that involve the use of explosive munitions are conducted during daylight hours.
- Small boats deploying or retrieving targets are typically conducted in Beaufort Sea state number 4 conditions or better to ensure safe operating conditions for the small boat operators.

- All activities would occur at sea; no on-land construction is required.
- The Navy would maintain oversight of all contractor activities in the offshore waters throughout the installation. The Navy would conduct a safety and environmental briefing for all contractor personnel prior to installation activities.
- Aircrew make every attempt to avoid large flocks of birds to reduce the safety risk involved with a potential bird strike. Since 2011, the Navy has required that all Navy flying units report all bird strikes through the Web-Enabled Safety System Aviation Mishap and Hazard Reporting System.

Analysis of Effects on Listed Species

Hawaiian seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby structures. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable to light attraction. However, with the implementation of conservation measures above, including that white lights shall not be visible from outside the ship and any proposed lighting would be directed downward to minimize the illumination of surrounding areas, impacts to Hawaiian seabirds associated with lighting would be highly unlikely to occur. Because impacts to Hawaiian seabirds associated with lighting are highly unlikely to occur, adverse effects to the Hawaiian seabirds associated with lighting are therefore considered discountable.

Types of sonar and other underwater acoustic sources that would generate noise may interfere with seabirds traversing the action area. While it is a possibility that seabirds may be affected, these sounds would be negligible as most Hawaiian seabirds spend a limited amount of time submerged underwater. Hawaiian petrels, short-tailed albatrosses, and band-rumped storm petrels do not submerge while foraging; therefore, they would not be exposed to underwater sound from sonar and other active acoustic sources. Newell's shearwaters may briefly submerge while foraging or pursuit diving, so there is a remote chance that these species could be exposed to underwater sound sonar and other active acoustic sources. However, any exposure is anticipated to be temporary and intermittent in nature. Furthermore, all Hawaiian seabirds occur within the Hawai‘i Action Area at low frequencies. Considering the limited amount of time Hawaiian seabirds are known to be submerged underwater, the low presence of Hawaiian seabirds within the project area, and the implementation of the conservation measures above, impacts from acoustic sources associated with this project are highly unlikely to occur. Because impacts to Hawaiian seabirds associated with acoustic sources are highly unlikely to occur, adverse effects to Hawaiian seabirds associated with acoustic sources are therefore considered discountable.

Weapons-firing activities, including the use of explosive munitions, and potential bird strikes may disrupt seabird movement throughout the action area. However, because all Hawaiian seabirds occur in oceanic and offshore waters within the Hawai‘i Action Area at low frequencies,

impacts from explosive munitions and potential bird strikes are highly unlikely to occur. Because impacts to Hawaiian seabirds associated with explosive munitions and potential bird strikes are highly unlikely to occur, adverse effects to Hawaiian seabirds associated with explosive munitions and potential bird strikes are therefore considered discountable.

Summary

We have reviewed our data and conducted an effects analysis of your project. Based on the project actions as described above, effects to listed species are extremely unlikely to occur and are considered discountable. Therefore, because impacts from the proposed project are considered discountable, we concur with your determination that the proposed action may affect but is not likely to adversely affect Hawaiian seabirds.

We appreciate your efforts to conserve endangered species. If you have any questions regarding this letter, please contact Nikki Imamura, Fish and Wildlife Biologist at [redacted] or email: [redacted] When referring to this project, please include the reference number: 2025-0078469.

Sincerely,

Lorena Wada
Planning and Consultation Team Manager

J.5 Magnuson-Stevens Fishery Conservation and Management Act

J.5.1 California

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0072
February 3, 2025

Assistant Regional Administrator, Office of Protected Resources
National Marine Fisheries Service West Coast Region
501 West Ocean Boulevard Suite 4200
Long Beach, CA 90802

Dear Sir or Madam:

SUBJECT: NAVY SUBMISSION OF ESSENTIAL FISH HABITAT ASSESSMENT AND REQUEST FOR CONSULTATION FOR THE HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Public Law 104-267), the U.S. Navy is formally submitting to the National Marine Fisheries Service West Coast Region, the Navy's Essential Fish Habitat Assessment (EFHA) and request for consultation for the California portion of the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement/Overseas Environmental Impact Statement.

The HCTT California EFHA (enclosure) will be forwarded to the appropriate staff electronically based on previous requests for digital submission only.

We appreciate your continued support in helping the U.S. Navy meet its environmental responsibilities. If there are any questions on this request, my point of contact is Mr. Chip Johnson. He may be reached via e-mail at [redacted] or via phone at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: HCTT California EFHA

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

March 18, 2025

Refer to NMFS No:
WCRO-2025-00194

Captain J.H. Beattie
Department of the Navy
U.S. Pacific Fleet
250 Makalapa Drive
Pearl Harbor, Hawaii 96860-3131

Re: Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation Response Letter for the California Portion of the Navy's Hawaii-California Training and Testing (Phase 4)

Dear Mr. Beattie:

On February 3, 2025, NOAA's National Marine Fisheries Service (NMFS) West Coast Region (WCR) received a letter via email from the U.S. Department of the Navy (Navy), requesting initiation on essential fish habitat (EFH) consultation for the California portion of the Hawaii-California Training and Testing (HCTT) Phase 4 (proposed project), in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA). In addition to the letter, NMFS also received the EFH Assessment for the proposed project and an enclosure titled: "Navy 2025 Supplemental EFHA Material". The letter referenced the HCTT Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), and NMFS WCR was provided (February 20, 2025) with the link to access Version 4 of the Draft EIS/OEIS and associated Appendixes.

After reviewing the EFH Assessment, supplemental material, and relevant sections of the Draft EIS/OEIS, NMFS WCR requested additional information to initiate EFH consultation, including details of the analysis used by the Navy to determine potential impacts to fish from detonations, updated information on amphibious landing activities at San Clemente Island (SCI) and changes for this proposed activity between Phase 3 and Phase 4, and specifics for the Limpet Mine Training Neutralization System (LMNS) activity in central San Diego Bay (SDB). Subsequent to that request, the Navy provided the requested information via email on February 20, 2025, including a memorandum for the record titled: "Additional Information Supporting the US Navy's Essential Fish Habitat Assessment for the California Portion of the Hawaii-California Training and Testing Study Area." Additionally, throughout the pre-consultation period, NMFS WCR requested via email (September 17, 2024, and November 21, 2024) supplemental

information that pertained to a number of issues, including amphibious vehicle lanes and landing locations, cumulative effect analyses, tracking of military expended material (MEM) and alternative options to offset cumulative adverse effects from MEM discharge to the ocean, seafloor mapping data, implementation of relevant best management practices discussed previously for Phase 3, as well as the status of implementation for EFH Conservation Recommendations (CRs) that NMFS WCR provided for training conducted at the Silver Strand Training Complex (SSTC) in San Diego (October 13, 2010) and also the Point Mugu Sea Range (PMSR) Testing and Training (October 14, 2020). The Navy responded to NMFS WCR's requests on September 17, 2024, and December 10, 2024. Having reviewed all of the above information, NMFS WCR prepared the following response pursuant to section 305(b)(4)(A) of the MSA.

Proposed Action

The Navy's Proposed Action is to conduct military readiness training and testing activities throughout the in-water areas off the coast of Northern and Southern California, at Navy pierside locations, in the transit corridor between Hawaii and California, and around the Hawaiian Islands. Although not part of any defined range complex, the transit corridor provides adequate air, sea, and undersea access and space to conduct training and some sonar maintenance and testing while en route between California and Hawaii. Those activities that occur within the Hawaii Range Complex Study Area are being addressed in a separate EFH consultation between the Navy and NMFS Pacific Island Regional Office (PIRO). As agreed to previously with the Navy, NMFS WCR will focus this consultation primarily on those activities occurring within the California Study Area of the HCTT Phase 4. This area includes:

- The Southern California (SOCAL) Range Complex - expanded from Phase 3 to Phase 4 to a total area of 217,000 square nautical miles (NM^2) to include two new areas of special use airspace corresponding to the Warning Area 293 (W-293) and W-294
- The PMSR - a controlled sea and associated airspace area of approximately 27,000 NM^2 consisting of 3 restricted areas, 11 warning areas, and a test range area including portions of the Naval Base Ventura County (NBVC) Port Hueneme and San Nicolas Island (SNI)
- The Northern California (NOCAL) Range Complex - composed of two separate areas located at least 12 nautical miles (NM) offshore of Central and Northern California: a northern area (approximately 6,000 NM^2) located northwest of San Francisco, and a southern area (approximately 10,000 NM^2) located southwest of Monterey Bay
- Four amphibious approach lanes providing California land access from the NOCAL Range Complex and PMSR
- Areas along the Southern California coastline from approximately Dana Point to Port Hueneme

- The SSTC - an integrated set of training areas located on and adjacent to the seaside of Silver Strand, outside SDB, and divided into two non-contiguous areas: SSTC-North and SSTC-South
- Selected locations within SDB

The Proposed Action includes three separate groups of activities: training, testing, and modernization and sustainment of ranges (new activity in HCTT Phase 4). Collectively, these proposed groups of activities include: the detonation of underwater explosives; weapons firing; the use of active sonar and acoustics and electromagnetic devices; pile driving; deployment of various types of seafloor devices and other in-water devices (e.g., remotely operated vehicles); vessel movement and anchoring; and ship to shore transport of personnel, equipment and supplies. Vessel operations will be performed with a variety of crafts, including different types of ships (e.g., surface ships, surfaced submarines, rigid-hull inflatable boats, large amphibious vehicles, larger ships). Pile driving activities (i.e., impact pile driving and vibratory pile removal) will be conducted within the Port Hueneme Harbor as part of Port Repair Damage activity.

The types and numbers of activities included in Phase 4 account for fluctuations in order to meet evolving or emergent military readiness requirements, including those from Phase 3. The increase in the tempo and types of military training and testing activities in Phase 4 is the result of the introduction of new technologies, the evolving nature of international events, advances in warfighting doctrine and procedures, and changes in force structure (organization of ships, weapons, and personnel). Such developments influenced the frequency, duration, intensity, and location of required military readiness training and testing activities. Due to the considerable area expansion from Phase 3, also due to the inclusion of PMSR activities, Phase 4 encompasses a larger number of annual events for each group activity compared to Phase 3. Relative to Phase 3, Phase 4 includes new activities (e.g., deployment of a new platform at SSTC, research and testing of mine countermeasure technology, several new air warfare training activities, expanded amphibious vehicle training).

For amphibious landing exercises, the Navy intends to retain the use of designated landing beaches in the Pyramid Cove portion of southern SCI that were used in Phase 3. As part of this activity, the Navy is proposing to continue cutting a limited portion of nearshore kelp canopy to allow access to the designated beaches on SCI (NMFS 2020). The Navy will cut the kelp within four areas from the sea surface to a depth of approximately 38 ft below mean lower low water (MLLW), and anticipates a maximum requirement of 4 cutting events per year, as previously indicated to NMFS WCR.

Magnuson-Stevens Fishery Conservation and Management Act Comments

Action Area

The proposed project occurs within EFH for various federally managed fish species within the Coastal Pelagic Species (CPS), Pacific Coast Groundfish (PCG), and Highly Migratory Species (HMS) Fishery Management Plans (FMPs). In addition, the proposed project occurs within estuarine habitat and within, or in the vicinity, of seagrass (e.g., eelgrass), canopy kelp, and rocky reef habitat, which have been identified as habitat areas of particular concern (HAPC) under the PCG-FMP. Designated HAPC are not afforded any additional regulatory protection under the MSA; however, Federal projects with potential adverse impacts to HAPC will be more carefully scrutinized during the consultation process.

In addition to HAPCs, other biogenic habitats, including deep-sea corals and sponges, are known to occur within the Action Area. The following NOAA Deep-Sea Coral and Sponge Map Portal contains information regarding observed coral and sponge locations within the Action Area: https://www.ncei.noaa.gov/maps/deep-sea-corals-portal/

Effects of the Action

Section 305(b) of the MSA directs federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Thus, the threshold for an adverse effect determination is low. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the Action Agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.905(b)). The degree and/or extent of the adverse effect influences the scope of the EFH Conservation Recommendations (CRs) that are provided by NMFS.

Due to the large number of activities associated with the Proposed Action, and the fact that many of these activities (e.g., aircraft and helicopter training activities) will have little or no impact to EFH, NMFS WCR focuses the evaluation of potential adverse effects on group of activities rather than individual exercises.

Adverse effects to EFH from the Proposed Action would result due to: 1) release of MEM, acoustic impacts (e.g., pile driving, underwater explosives), direct physical disturbance (e.g.,

canopy kelp cutting at SCI), potential strikes, and contaminants (e.g., explosive and associated byproducts, metal, other chemicals and materials). Impacts associated with these activities would range substantially, and would include potential habitat loss or conversion, physical injury or mortality, modification in fish behavior, and increased turbidity. The duration of these impacts would also be expected to range from temporary to permanent.

Of particular concern to NMFS WCR are impacts associated with the discharge of MEM and associated materials generated from explosive detonations. The release of MEM, such as explosive fragments (e.g., from missiles, gunnery, and other projectiles), expendable targets, other munitions, metals, flares, chaff, and plastics, would end up introducing marine debris into the ocean water column and also to the bottom due to the materials described above sinking to the seafloor, depending on the material composition of various MEMs. Given the synergistic and cumulative effects of these materials to EFH, NMFS WCR concern is also amplified by the fact that the Proposed Action Area is within a large region (i.e., the U.S. North Pacific) that is already characterized by a relatively large amount of land-based debris (Ribic et al. 2012), and the expansion of the Action Area in Phase 4 compared to Phase 3 (e.g., expanded SOCAL Range Complex, inclusion of NOCAL Range Complex and PMSR areas) would result in a widening of areas with potential or observed presence of sensitive habitats across the entire Proposed Action Area, including HAPCs (i.e., seagrass, canopy kelp, and rocky reef), deep-sea corals, and sponges. Impact pathways associated with marine debris include ingestion, entanglement, smothering/covering, and alteration, from megafauna (Kühn & van Franeker 2020) down through the benthic invertebrate community (Katsanevakis et al. 2007, Gregory 2009, Kühn et al. 2015, Guzzetti et al. 2018). Marine debris can also become snagged on and/or damage sensitive habitats, such as reefs (Carvalho-Souza et al. 2018). Due to its contamination of virtually all coastal and marine environments worldwide and the increasing number of species for which negative interactions with debris have been demonstrated, marine debris is considered a global-scale problem (Eriksen et al. 2014, Provencher et al. 2017, Courtene-Jones et al. 2017; 2019, Parton et al. 2019). Also, NMFS WCR is especially concerned about the negative effects associated with marine plastic pollution, which is ubiquitous throughout the marine environment and represents one of the most difficult current environmental challenges (UNEP 2014, Eriksen et al. 2014, Botterell et al. 2018), including in the Pacific Ocean and Southern California. Lebreton et al. (2018) estimated plastic debris accumulation to be at least 79,000 tons in the Great Pacific Garbage Patch, a 1.6 million square kilometers (km^2) area between California and Hawaii. Locally, monitoring efforts reported a threefold increase in the amount of plastic debris in the Southern California Bight (SCB) seafloor in the period from 1994 to 2013 (Moore et al. 2016). Ingestion of plastics can cause a wide range of deleterious effects through various physical and biochemical pathways, including internal wounds, digestive tract blockage, satiation, potential starvation, impaired feeding behavior, reduced reproduction, concentration of toxic chemicals, liver stress, endocrine system disruption, behavioral impacts, and impairments to growth, reproduction, and respiration (Gregory 2009, Rochman et al., 2013, 2014, Provencher et al. 2017, Talley et al. 2020). A variety of species, ranging from plankton and small prey

organisms to marine megafauna, including commercially important species, have been documented to ingest plastics (Provencher et al. 2017, Courtene-Jones et al. 2017; 2019, Botterell et al. 2018, Kuhn & van Franeker 2020). For instance, Markic et al. (2019) conducted a review of papers evaluating plastic ingestion by wild marine fish and found that 65% of fish species and 67% of commercial fish species examined had ingested plastic. Moreover, studies have indicated that certain species, including filter feeding *Clupeiformes*, such as those managed under the CPS-FMP, are likely more susceptible to plastic ingestion due to their gill structures and feeding behavior (Moore et al. 2001, Collard et al. 2017).

Plastics are non-biodegradable, can travel large distances, are widely distributed throughout the world's oceans, and provide hard surfaces for opportunistic colonizers (Thiel & Gutow 2005, Gregory 2009). Because pelagic plastics can be colonized by a variety of organisms (Gregory 2009), they can facilitate the transport and expansion of non-native species, including aggressive invasives, via increased rafting opportunities (Derraik 2002, Gregory 2009). In fact, Barnes (2002) found that this potential means of introducing non-native species to new areas was more than doubled due to input of plastic litter to the marine environment. These invasions can have severe consequences, with some estimating a potential decrease in marine biodiversity as high as 58% as a result (Derraik 2002).

Estimates of the quantities of various MEM that would be discharged in the Proposed Action Area were not provided in the EFH Assessment. However, Appendix B of the EFH Assessment does include tables containing the result of calculations of the potential MEM impact footprint (i.e., MEM footprint or explosive crater footprint) from all activities in a single year to bottom habitat from the instantaneous impacts of MEM or explosions on the ocean surface for testing and training activities conducted during the Proposed Action within the HCTT study area. Footprints were calculated based on two scenarios under the Proposed Action: the worst-case scenario (less probable) of all MEM or underwater explosions occurring on one particular substrate type (Alternative 1); and the scenario (more probable and realistic) of uniform or proportional impact distribution within a particular area (Alternative 2). Importantly, Navy's training and testing typically occurs in areas that are not called out or linked to specific activities due to flexibility and national security reasons. Also, Appendix B notes, "*The actual instantaneous impact on the bottom would depend on the number and location of MEM expended and not recovered, which is likely much lower and more concentrated than either scenario being analyzed*." The amount of EFH that may be impacted by MEM was calculated using the maximum quantity of every expended item rather than the actual numbers of expended material based on historic expenditures, which are not easily or efficiently tracked. Data for numbers of MEM and underwater explosions were multiplied by an estimate of the footprint size for representative MEM items in each material category (e.g., bombs, projectiles - grenade, projectiles - missiles, etc.). When added up to calculate a total annual projected MEM impact footprint, the result for the California portion of the Proposed Action indicates a total potential annual MEM impact footprint of 82.5481 acres (Alternative 1), and 116.5559 acres (Alternative

2). Although we realize these estimates are relatively conservative and the Proposed Action Area is expansive, the proposed project is intended to support military readiness requirements "into the foreseeable future". Therefore, the impact footprints from MEM would increase over time (e.g., as much as 816 acres over 7 years under Alternative 2), resulting in greater cumulative impacts to EFH.

Impacts resulting from explosive detonations (e.g., missiles, bombs, projectiles, etc.) and loud, impulsive sounds at or near the water's surface can include: acoustic impacts and disturbance; injury or mortality from the shock/pressure wave; disruption of habitat; exposure to chemical by-products; behavioral effects; and indirect effects such as those on prey species or other components of the food web. The type and severity of the impact varies greatly depending upon several factors, including the magnitude of the explosion, proximity of habitat or fish to the explosion, marine community characteristics, size and body type of fish, type of water body (e.g., enclosed bay, open ocean, etc.), position of detonation within the water column, etc. Despite the inherent variability in determining impacts associated with underwater explosives, there are a few general conclusions that can be made based on empirical studies. Specifically, underwater explosives are lethal to most fish species in the immediate vicinity of the explosion regardless of size, shape, or internal anatomy. As the distance from the explosion increases, fish with gas-filled swim bladders are more susceptible to the blast and suffer a higher mortality than those without swim bladders (Baxter et al. 1982, Kevin & Hempen 1997, Hastings & Popper 2005). In addition, as noted in the EFH Assessment and the Draft EIS/EOIS (Appendix E), adult fishes, and larger species would generally be less susceptible to injury and mortality from sounds and energy associated with explosive activities than small, juvenile, or larval fishes. Also, fish may experience brief periods of masking, physiological response, or behavioral reactions, depending on the level and duration of exposure.

The Navy conducted an Acoustic Effect Model analysis to assess the impacts on marine species, including fish, due to acoustic and explosive stressors under a maximum year of activities conducted at sea under the Proposed Action (Appendix E in the Draft EIS/EOIS). Ranges to effects for explosives were estimated by modeling the distance that sound would need to propagate to reach exposure level thresholds specific to a fish hearing group or category that would cause temporary threshold shift (TTS), injury, and mortality. For example, for a detonation within the E3 explosive bin (> 0.5-2.5 pounds (lb) NEW) at water depth ≤ 200 meters (m), the model estimated the mortality of fishes without a swim bladder to occur within a median range of 64 m (SD = 12 m) from the detonation point. However, the inherent environmental (e.g., fish population and spatial distributions) and project-related (e.g., location and number of detonations) variability makes it infeasible to accurately assess the total mortality associated with a detonation, or the cumulative impacts of these exercises over time (e.g., one year or into the foreseeable future). Additionally, as stated in Appendix E of the Draft EIS/EOIS, the Navy Acoustic Effects Model cannot account for the highly non-linear effects of cavitation and surface blow off for shallow underwater explosions, nor can it estimate the explosive energy entering the

water from a low-altitude detonation. Thus, for this analysis, in-air sources detonating at or near (within 10 m) the surface were modeled as if detonating completely underwater at a source depth of 0.1 m, with all energy reflected into the water rather than released into the air.

The analysis based on the Navy Acoustic Effects Model appears to not consider the size of the fish, which is a key parameter to affect the severity of detonation impacts as described above. In previous consultations (e.g., Phase 3 in 2018, and PMSR in 2020), and as an attempt to provide some assessment of the mortality effects on fishes also based on their weight, the Navy provided an analysis based on Young (1991) that calculated a 10% mortality distance (i.e., 90% survival) for fish of varying sizes due to the detonation of explosives of varying charge weights. For comparison purposes, NMFS WCR considered the analysis based on Young (1991), as it allows for estimation of impacts of detonations based also on fish weight. For example, this analysis estimated a 10% mortality distance of approximately 810 feet for a fish weighing 0.1 lb and a detonation of a 29 lb NEW at 60 ft depth. This analysis was based on underwater detonations, whereas the detonations from HCTT Phase 4 activities would typically occur above, at, or very near the water's surface. Thus, adverse effects from project detonations would be expected to be less severe than the analysis results may indicate. It is important to note that lethal and sub-lethal effects to fish, as well as behavioral effects, would be expected outside of the 10% mortality distance. These mortality estimates are useful for providing a general idea of the area of impact associated with individual detonations of varying sizes.

One particularly relevant study by Dahl et al. (2020), also cited in the Draft EIS/EOIS, evaluated the physical effects from underwater explosions on Pacific sardines (*Sardinops sagax*) within the Navy's SSTC. Pacific sardines, managed under the CPS-FMP, contain physostomous swim bladders with a direct connection to the gut that allows for the easy transfer of gasses in and out of the swim bladder (Dahl et al. 2020). The Pacific sardines were caged roughly 5 km offshore of SDB over primarily sandy bottom at a consistent depth of approximately 19.5 m, and exposed to a single detonation of C4 explosive occurring at a depth of 10.5 m at distances varying from 18 to 246 m from the source. The C4 explosive used in the study had a NEW of approximately 10.3 lbs, which is at the lower end of the B6 bin identified in the Draft EIS/EOIS. The explosive bins for the Proposed Action range from E1 (0.1-0.25 lb NEW) to E16 (> 7,500-14,500 lb NEW). Dahl et al. (2020) found that only 8 of the 209 fish exposed to the detonation died, with half of those mortalities occurring in the closest cage roughly 18 m from the explosion. It is worth noting that because the live fish were euthanized shortly after being brought to the surface, it is unclear whether any of those fish that initially survived the blast would have died from their injuries later on (Dahl et al. 2020). No external injuries were attributed to the blast. However, five types of internal injuries observed in one or more animals (i.e., burst capillaries, fat hematoma, reproductive blood vessel rupture, swim bladder rupture, kidney rupture), many of which are consistent with injuries observed in previous studies evaluating impulsive sound sources, were found to be statistically significant and thus were determined to be caused by the explosion (Dahl et al. 2020). When applying experimental conditions used by Dahl et al. (2020)

and integrating them with the analysis of Young (1991), the analysis reveals a 10% mortality distance of approximately 515 feet for a Pacific sardine weighing 0.137 lb (i.e., the mean weight of fish used in the cage experiment by Dahl et al. 2020) and a detonation of a 10.3 lb NEW at 34.5 ft depth (i.e., the same detonation depth in Dahl et al. 2020). As noted in the EFH Assessment, the number of fish potentially killed by an in-water explosion would depend on a number of factors, including the population density near the blast, size of explosive (i.e., NEW), depth of explosion, and fish size. For example, if an explosion occurred in the middle of a dense school of sardines or other schooling fish, a large number of fish could be killed. However, the probability of this occurring is low based on the patchy distribution of dense schooling of fish. Additionally, the majority of explosions will occur at the water's surface, resulting in less of an impact compared to underwater detonations. Moreover, although detonations will occur at various locations throughout the Proposed Action Area, most detonations will occur outside 12 NM in deeper water and away from sensitive nearshore habitats.

In conclusion, although the adverse effect to the habitat themselves (e.g., water column, near the water's surface, etc.) from explosions would be temporary, detonation impacts could be severe enough to cause mortality in a variety of fish species, including Federally managed species, and would be expected to disproportionately affect fishes with swim bladders, smaller fishes, and earlier life stages. However, there is insufficient information in the EFH Assessment to more accurately assess the cumulative impact of underwater detonations over time (e.g., one year, or more). Ultimately, given the majority of detonations will occur primarily at, above, or near the water's surface and in deeper water away from sensitive habitats, and the expansive size of the area over which these detonations may occur, NMFS WCR does not believe they will result in substantial adverse effects to EFH.

In the email sent to the Navy on November 21, 2024, NMFS WCR expressed concern that underwater detonations from LMNS counterchanges may adversely impact existing eelgrass beds located within the ECHO area designated by the Navy for this activity in Central SDB. As specified by the Navy in their memorandum for the record (February 20, 2025) LMNS training events use a small charge (i.e., bin E0, less than 0.1 lb NEW) to "neutralize" a limpet mine. However, as an emergency action in case of a LMNS's explosive ordnance misfire, the Navy will use a LMNS counterchange to dispose of the detonation material and clear the explosive hazard, under safety protocol for Mine Neutralization Explosive Ordnance Disposal Training (MNEODT) activity. The LMNS counterchange uses a charge of up to 2.5 lbs NEW (fitting into the bin E3 category for this Proposed Action), which will have a larger impact to the surrounding marine environment, including eelgrass. The proposed location for designated LMNS training events at ECHO is within an area with an observed presence of dense eelgrass beds (Merkel & Associates 2024).

Based on information provided by the Navy, the location of LMNS training events at ECHO is in shallow water (depth between 6-8 ft). Also, there would be approximately 44 LMNS events per

year within ECHO, with an estimated maximum number of 6 unanticipated misfire events per year that would require the use of the LMNS countercharge. Based on information included in Appendix I of the Draft EIS/EOIS, an explosive of 2.5 lbs NEW is estimated to have a crater footprint of approximately 30 ft^2, though the area of effect is calculated for a bottom or near-bottom charge and does not represent a near surface charge placed on a horizontal metal sheet supported vertically from a support boat. Therefore, we would assume that blasts from LMNS counterchange may have direct impacts to eelgrass beds at ECHO, though the information included in the EFH Assessment is not sufficient to quantify the exact radius of the detonation footprint as no quantitative data on blast radius are available for that scenario.

There is limited information and data on the effects of underwater explosions on aquatic plants, including eelgrass. Ludwig (1977) investigated the effects of explosives to remove eelgrass (*Zostera marina*) in the Niantic estuary in Connecticut. Experimental detonations were conducted with single and multiple charges and a weighted length of detonator cord, though no information was provided for the type, weight, or NEW of charges used in the experiment. The results showed that the immediate impact of a single charge detonation generated a small crater 45 cm in diameter and 15-20 cm deep. Also, eelgrass experienced a dieback during an eight-week period after explosions, resulting in a cleared, circular area of 7-8 m in diameter in the case of the single charged detonation. Chain detonations resulted in overlapping rings of impact ultimately clearing a rectangular area approximately 40 m long and 7 to 8 m wide. The detonation cord created a rectangular area of 2-4 m in total width. Ludwig (1977) attributed the dieback of eelgrass to direct disruption of vascular structures within the rhizomes. Based on results by Ludwig (1977) and information included in the EFH Assessment, the sensitivity of eelgrass habitat and the association of various fish species with this habitat underscore the importance of avoiding impacts to eelgrass. Therefore, the avoidance of eelgrass habitat during LMNS activities, to the maximum extent practicable, will be critical.

The cutting of nearshore canopy kelp at Pyramid Cove, off southern SCI, would result in adverse effects to kelp, which is considered a HAPC for various federally managed fish species within the PCG-FMP. The removal of kelp from the sea surface to approximately 38 ft below MLLW would result in reduced structural habitat available for fishes, lost productivity, and the potential facilitation of the spread of invasive species. Of particular concern to NMFS WCR is the loss of important habitat functions for rockfishes. Kelp provides increased structural complexity to rocky substrate, and extends that habitat complexity into the water column (Bodkin 1988). In addition to other functions (e.g., primary productivity), canopy-forming kelp forests support diverse and abundant fish assemblages by providing important refugia, foraging habitat, and physical orientation (Bodkin 1988, Love et al. 2002). Canopy-forming kelp has also a strong influence on larval recruitment and thus spatial and temporal dynamics of fish assemblages (Bodkin 1988, Carr 1991).

Various rockfishes [e.g., gopher (*Sebastes carnatus*), copper (*S. caurinus*), and kelp (*S. atrovirens*) rockfishes] are known to first recruit to the upper kelp canopy, prior to beginning a vertical downward migration and ultimately settling in rocky bottom habitats (Nelson 2000, Love et al. 2002). For instance, young-of-the-year (YOY) kelp rockfish recruit to the surface canopy of giant kelp (*Macrocystis pyrifera*) in mid to late summer, inhabit a series of microhabitats within the canopy (i.e., within 1.5 m of the surface) prior to migrating to holdfasts at the base of the plants, and ultimately moving to rocky reef interstices (Nelson 2000). It is believed the timing of their downward migration is attributed first to ontogenetic cues (e.g., size) and then to environmental triggers, such as the loss of kelp canopy due to warmer waters and reduced nutrients in late summer or the beginning of the winter storm season (Love et al. 1991; Nelson 2000). Repeatedly cutting a substantial portion of these important canopy-forming kelp in the project area would disrupt the life history development of kelp rockfishes, and other congeners. For instance, Carr (1991) suggests the availability of kelp structure can have an important influence on the temporal variability of rockfish recruitment patterns.

There is a paucity of information evaluating the effects of the specific action (i.e., the depth and frequency of kelp cutting) proposed by the Navy. However, under the "contemporary" method for commercially harvesting kelp dating back to 1956, the California Department of Fish and Wildlife (CDFW) has allowed the removal of only the upper 1.2 m (approximately 4 ft) of kelp plants (CDFW 2014, North 1987). There is evidence demonstrating that this harvesting methodology has had little to no adverse effect on the population stability of *Macrocystis* beds (Limbaugh 1955, Barilotti & Zertuche-Gonzalez 1990). Moreover, Quast (1968) reported that no more than 25% of the small fish and motile invertebrates that inhabit the kelp canopy are removed through kelp harvesting, and found no evidence of a measurable impact on fish populations. However, Nelson (2000) notes that events that may affect the age or size distribution of macroalgae (e.g., kelp harvesting, severe storms, El Nino events) could have a direct effect on the strength of a subsequent YOY kelp rockfish year class.

Since the findings regarding "contemporary" kelp harvesting methods are based on cutting only the upper 1.2 m of kelp canopy, though with no information on the frequency of the cutting, we would anticipate increased adverse impacts from the more extensive kelp cutting proposed by the Navy (i.e., up to a maximum of 4 cutting events per year). Therefore, considering effects observed from experimental kelp removals is also appropriate. For instance, Miller & Geibel (1973) conducted experimental studies to evaluate the effects of "maximum harvesting" of *Macrocystis* beds, represented by beds that were cut 1.3 - 2 m (4 – 6 ft) below mean tide three times in a year. They returned to the study site several months after concluding the experiment and found the cut area contained no kelp canopy, while nearby uncut areas had dense canopies. Miller & Geibel (1973) concluded, "*this deterioration must have been from effects of our experimental canopy removal*." Moreover, when Bodkin (1988) removed *Macrocystis* at the holdfast from high relief rocky reef in an experimental study, he observed a significant decline in the abundance of seven species, most of them of the genus *Sebastes*, with *S. atrovirens*

disappearing completely following the removal. After also observing sharp declines in juvenile rockfish, Bodkin (1988) concluded that the giant kelp forest provided important nursery and forage habitat, and its removal caused a "severe disturbance" to the associated fish assemblages. Such a disturbance can be particularly relevant given that highly successful rockfish recruitment years occur infrequently, sometimes only once in a decade or more.

To implement CRs provided by NMFS WCR for the supplemental EFH consultation to cut nearshore kelp canopy at SCI (NMFS 2020), the Navy agreed to conduct marine habitat surveys in the four areas designated as potential approach and departure corridors for amphibious landings events at beaches in Pyramid Cove. In April 2022, pre-operational habitat mapping and kelp surveys, similar to Pondella et al. (2015), were conducted across the four designated areas that were identified for kelp cutting activities, as well as two reference sites. In June 2022, kelp cutting occurred only in one area (i.e., Area 2), with post-operational kelp surveys that were conducted in October 2022 (Merkel & Associates 2023). Results of the survey revealed that cutting the kelp canopy (only in Area 2) did not result in a significant difference in algal and benthic invertebrate cover between the pre- and post-cutting event, suggesting kelp cutting had no short-term effects on algal and invertebrate communities. However, kelp cutting resulted in a decline in fish density at both the kelp canopy and mid-water levels following the cutting, though an increase in fish density was found at the benthic level resulting in no change in total fish density within the cutting area. Also, fish species richness declined at both the canopy and mid-water levels at the cutting area following cutting mainly due to a decrease in canopy and midwater fish species, thus suggesting that the loss of surface canopy and mid-water structure likely affects fish species that have an affinity for those habitats (Merkel & Associates 2023). Similar results were found by O'Connor and Anderson (2010) when conducting fish surveys several months after the removal of giant kelp, though results also suggested that stipe densities of kelp after a relatively short time were at least as high as at the initiation of their experiment, indicating that kelp had recovered quickly to pre-disturbance levels. Realistically, adverse effects to EFH from the proposed action would likely fall somewhere between "contemporary" kelp harvesting that removes the upper 1.2 m of kelp canopy and the experimental removals conducted by Bodkin (1988) that cut plants down to the holdfast.

Another concern is the potential spread of non-native species, such as the invasive brown alga, *Sargassum horneri*, which was first documented in Southern California in 2003. Its rapid spread since then has affected the SCB mainland coast and several nearshore islands, including SCI (Marks et al. 2015). *S. horneri* presence was not reported in Pondella et al. (2015), though it was observed on the leeward side of SCI in more recent monitoring surveys (Williams et al. 2024). Because it is present at SCI (Williams et al. 2024), the primary concern is to avoid facilitating its spread, which could threaten the existing, healthy kelp forests at the island. Once widely established, eradication is highly unlikely and even controlling *S. horneri* is difficult. This is especially true under certain environmental conditions, such as warm water temperatures associated with an El Nino event that can favor *S. horneri* over native algae, which prefer cooler

water temperatures (Marks et al. 2017). In addition, Miller & Geibel (1973) revisited a former study site and found that canopy kelp had been replaced by a dense growth of perennial red algae in plots where kelp had been subjected to "maximum harvesting." Miller & Geibel (1973) theorized that this shift in the algal community was due to repeated cutting of the kelp canopy potentially reducing the transfer of nutrients to the holdfast, inhibiting its growth and making it more susceptible to removal from the substrate (e.g., via storms or other disruptions). Although the red algae were not identified as non-native, it demonstrates the potential for other algal species, which do not provide the same habitat structure and functions, to colonize and then dominate an area vacated after large brown algae die off (Sousa et al. 1981). Therefore, potential adverse impacts to native canopy-forming kelps due to repeated cuttings, such as reduced abundance, spatial distribution, or robustness, could facilitate replacement of canopy kelp forest within the action area, including aiding the spread of *S. horneri*, especially under environmental conditions that favor it over native species.

EFH Conservation Recommendations

As described in the above effects analysis, NMFS WCR has determined that the Proposed Action would adversely affect EFH for various federally managed fish species within the PCG, CPS, and HMS FMPs. Therefore, pursuant to section 305(b)(4)(A) of the MSA, NMFS WCR offers the following EFH Conservation Recommendations to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

1. The discharge of marine debris associated with MEM would adversely affect EFH, and those effects would be expected to accumulate over time (i.e., years) from ongoing training and testing activities. Therefore, the Navy should implement conservation measures to offset those adverse effects to EFH. Options that address marine debris warrant special consideration, and previous projects associated with the military or its installations have included conservation measures to offset marine debris impacts. For example, the previous phase for PMSR included a conservation measure to provide funding to establish a Marine Debris Removal Program at SNI. Based on information provided by the Navy, this program is planned to continue into the foreseeable future. NMFS WCR is amenable to various approaches, especially those that include a marine debris removal component, including abandoned fishing gear (e.g., nets, lines, traps, etc.). The NOAA Marine Debris Program can help the Navy to identify existing programs, including civilian programs, in California (Christy Kehoe is the Regional Coordinator for the California Program, christy.kehoe@noaa.gov). NMFS WCR is willing to discuss these options with the Navy in more detail, including opportunities for the Navy to fund or support marine debris removal activities conducted by civilians and non-Navy entities in Southern California.
2. The blasts of LMNS countercharges within ECHO in Central SDB will adversely affect EFH and HAPC (i.e., eelgrass) present in the area. With regard to the possible mitigation

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measures, NMFS WCR supports the Navy using the annual San Diego Bay eelgrass survey as a surrogate to evaluate impacts of LMNS activities to eelgrass in ECHO. If there appears to be a decline in eelgrass that can be positively attributed to the LMNS counterchange detonations (2 lbs NEW), then NMFS WCR recommends the Navy to consider using credits from the existing Navy Eelgrass Mitigation Bank to offset the adverse effects to eelgrass.

3. NMFS WCR recommends the Navy to continue the nearshore kelp surveys around SCI that are also conducted in support of the San Clemente Island Integrated Natural Resources Management Plan, which assess kelp coverage and species assemblages similar to Pondella et al. (2015) and Williams et al. (2024), including a detailed assessment of any kelp forest habitat specifically within the proposed action area of Pyramid Cove. In particular, NMFS WCR recommends to prioritize kelp surveys at Pyramid Cove during years when amphibious landing activities that are part of HCTT Phase 4 will occur, requiring kelp cutting within Pyramid Cove nearshore areas. NMFS WCR supports this approach and believes it will help determine if there are any potential impacts to canopy kelp (and indirectly to associated rockfishes) from repeated kelp cutting events at Pyramid Cove. Should a shift in the algal community occur in the project area due to kelp cutting events, conservation measures to offset those impacts may be warranted. Therefore, if future surveys indicate cutting events have caused a shift in the algal community in the project area, relative to nearby areas at SCI that were not exposed to kelp cutting, the Navy should coordinate with NMFS WCR to develop an appropriate plan to offset those impacts. Special consideration should be given to options that contribute to the enhancement of kelp or rocky reef habitat (e.g., contribute funding to marine debris removal efforts, augment existing abalone recovery efforts). NMFS WCR is willing to discuss these options with the Navy in more detail.

4. NMFS WCR recommends the aforementioned Navy kelp surveys include a specific provision to document any occurrences of the invasive alga, *S. horneri*. Should any *S. horneri* be encountered within the project area during these surveys, to minimize potential adverse effects to EFH and HAPCs, we recommend the Navy evaluate potential measures to control its spread, and coordinate with NMFS WCR to implement any practicable measures.

Statutory Response Requirement

Please be advised that regulations at section 305(b)(4)(B) of the MSA and 50 CFR 600.920(k) of the MSA require your office to provide a written response to this letter within 30 days of its receipt and at least 10 days prior to final approval of the action. A preliminary response is acceptable if final action cannot be completed within 30 days. Your final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendations, you must provide an explanation of the reasons for not implementing those recommendations. The

reasons must include the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

Supplemental Consultation

Pursuant to 50 CFR 600.920(l), the Navy must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations.

Thank you for consulting with NMFS and consideration of our comments. If you have any questions regarding this letter, please contact Andrea Dell'Apa at [redacted]

Sincerely

Dan Lawson
Long Beach Office Branch Chief
Protected Resources Division

Cc: Chip Johnson, US Pacific Fleet, Environmental Readiness Division
Administrative File: 150316WCR2025PR00039

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IN REPLY REFER TO:
5090
Ser N46/0229
April 7, 2025

Mr. Dan Lawson
Long Beach Office Branch Chief, Protected Resources Division
National Marine Fisheries Service West Coast Region
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90802-4213

Dear Mr. Lawson:

SUBJECT: NAVY REPLY TO ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS FOR CALIFORNIA PORTION OF HCTT (PHASE IV)

Thank you for the comments you provided to the Navy in your letter dated March 18, 2025 (WCRO-2025-00194). Your letter correctly acknowledges that the scope of the Hawaii-California Training and Testing (HCTT) Proposed Action is limited to the Navy's in-water training and testing activities throughout the California portion of the HCTT Study Area.

Per Section 305(b)(4)(B) of the Magnuson-Stevens Act, this letter is the Navy's response to the conservation recommendations (CR) reflected in the previously mentioned letter. The Navy's response is provided after each National Marine Fisheries Service's (NMFS) recommendation below.

In regard to Navy's responses, activities (particularly the range modernization actions) are subject to the availability of funds properly authorized and appropriated by Congress. The Navy's commitments to plan, program, or recommend projects for funding should not be construed as an unauthorized commitment or a violation of the Anti-Deficiency Act (31 USC 1341 et seq).

NMFS CR #1: The discharge of marine debris associated with MEM [Military Expended Material] would adversely affect essential fish habitat (EFH), and those effects would be expected to accumulate over time (i.e., years) from ongoing training and testing activities. Therefore, the Navy should implement conservation measures to offset those adverse effects to EFH. Options that address marine debris warrant special consideration, and previous projects associated with the military or its installations have included conservation measures to offset marine debris impacts. For example, the previous phase for Point Mugu Sea Range (PMSR) included a conservation measure to provide funding to establish a Marine Debris Removal Program at San Nicolas Island (SNI). Based on information provided by the Navy, this program is planned to continue into the foreseeable future. NMFS West Coast Region (WCR) is amenable to various approaches, especially those that include a marine debris removal component, including abandoned fishing gear (e.g., nets, lines, traps, etc.). The National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program can help the Navy to identify existing programs, including civilian programs, in California (Christy Kehoe is the Regional Coordinator for the California Program, christy.kehoe@noaa.gov). NMFS WCR is willing to discuss these options with the Navy in more detail, including opportunities for the Navy to fund or support marine debris removal activities conducted by civilians and non-Navy entities in Southern California.

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April 7, 2025

Navy Response to CR#1: Navy does implement conservation measures to offset adverse effects to EFH, to include retrieval of some MEM when practicable and safe. Fiscal and logistical considerations also must be factored into retrieval. There is limited scientific justification and statutory authority for the Navy to expand its mission focus to conduct additional marine debris efforts. Years of surveys and scientific study do not show MEM to be the contributing factor to EFH quality or quantity. Requiring debris clean up from non-Navy sources does not minimize impact of Navy's effects to EFH. The Navy will continue to support annual marine debris removal at San Clemente Island (SCI) and SNI and supports community, volunteer efforts along coastal California. Based on seven surveys at SNI between November 2014 and October 2024, the Navy removed 10,758 pounds of marine debris from the shoreline[1]. All debris was of civilian origin (ex., plastic bottles, nets, etc.).

NMFS CR #2: The blasts of LMNS [Limpet Mine Neutralization System] countercharges within ECHO in Central San Diego Bay (SDB) will adversely affect EFH and habitat areas of particular concern (HAPC) (i.e., eelgrass) present in the area. With regard to the possible mitigation measures, NMFS WCR supports the Navy using the annual SDB eelgrass survey as a surrogate to evaluate impacts of LMNS activities to eelgrass in ECHO. If there appears to be a decline in eelgrass that can be positively attributed to the LMNS counterchange detonations (2 lbs NEW), then NMFS WCR recommends the Navy to consider using credits from the existing Navy Eelgrass Mitigation Bank to offset the adverse effects to eelgrass.

Navy Response to CR#2: The Navy concurs with NMFS's recommendation to continue eel grass monitoring within SDB, as funding allows, to monitor eel grass bed distribution and density at Navy's ECHO site. The Navy maintains a robust SDB eelgrass monitoring program with annual designated transect surveys and larger Bay-wide surveys every three years. The Navy had previously funded nine Bay-wide eelgrass surveys from 1993-2023. Additional funding ($442,000) is currently programmed for continued surveys through a 5-year cycle ending in fiscal year (FY) 2030 and will likely be continued through the following 5-year cycle after 2030 subject to budget approvals. Therefore, Navy will continue SDB eelgrass surveys documenting the health of eelgrass throughout the region.

NMFS CR #3: NMFS WCR recommends the Navy to continue the nearshore kelp surveys around SCI that are also conducted in support of the SCI Integrated Natural Resources Management Plan, which assess kelp coverage and species assemblages similar to Pondella et al. (2015) and Williams et al. (2024), including a detailed assessment of any kelp forest habitat specifically within the proposed action area of Pyramid Cove. In particular, NMFS WCR recommends to prioritize kelp surveys at Pyramid Cove during years when amphibious landing activities that are part of HCTT Phase 4 will occur, requiring kelp cutting within Pyramid Cove nearshore areas. NMFS WCR supports this approach and believes it will help determine if there are any potential impacts to canopy kelp (and indirectly to associated rockfishes) from repeated kelp cutting events at Pyramid Cove. Should a shift in the algal community occur in the project area due to kelp cutting events, conservation measures to offset those impacts may be warranted. Therefore, if future surveys indicate cutting events have caused a shift in the algal community in the project area, relative to

[1] Total cumulative cost of the seven surveys was $245,000, or approximately $35,000 per survey, to fund personnel transport (up to 50 people), labor, and barge cost for debris transport to the mainland and subsequent disposal.

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Ser N46/0229
April 7, 2025

nearby areas at SCI that were not exposed to kelp cutting, the Navy should coordinate with NMFS WCR to develop an appropriate plan to offset those impacts. Special consideration should be given to options that contribute to the enhancement of kelp or rocky reef habitat (e.g., contribute funding to marine debris removal efforts, augment existing abalone recovery efforts). NMFS WCR is willing to discuss these options with the Navy in more detail.

Navy Response to CR#3: Navy concurs with NMFS's recommendation to continue the nearshore kelp surveys at SCI and SNI and Navy will plan surveys within Pyramid Cove in support of amphibious landing activities. The Navy has a robust coastal survey program at SCI and SNI that has documented an overall healthy marine environment over 15 years of effort starting in 2010 for SCI. Under the same program, the Navy already funds a significant amount of annual black and white abalone monitoring at SCI and SNI. U.S. Pacific Fleet has already coordinated with Commander, U.S. Third Fleet environmental managers to ensure notification of future kelp cutting requirements are sent to U.S. Pacific Fleet as soon as the need is identified.

NMFS CR #4: NMFS WCR recommends the aforementioned Navy kelp surveys include a specific provision to document any occurrences of the invasive alga, *S. horneri*. Should any *S. horneri* be encountered within the project area during these surveys, to minimize potential adverse effects to EFH and HAPCs, we recommend the Navy evaluate potential measures to control its spread, and coordinate with NMFS WCR to implement any practicable measures.

Navy Response to CR#4: Navy concurs with NMFS's recommendation for documenting *S. horneri* during SCI and SNI kelp surveys and if found coordinate with NMFS WCR to determine if any measures are feasible to implement.

Navy appreciates your continued support in helping the meet its mission readiness and environmental responsibilities. If there are any questions, my point of contact is Mr. Chip Johnson. He may be reached via e-mail at [redacted] or via phone at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

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J.5.2 Hawaii

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0071
February 3, 2025

Mr. Gerry Davis
Assistant Regional Administrator, Habitat Conservation Division
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
1845 Wasp Blvd, Bldg. 176
Honolulu, HI 96818

Dear Mr. Davis:

SUBJECT: NAVY SUBMISSION OF ESSENTIAL FISH HABITAT ASSESSMENT AND REQUEST FOR CONSULTATION FOR THE HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Public Law 104-267), the U.S. Navy is formally submitting to the National Marine Fisheries Service Pacific Islands Region, the Navy's Essential Fish Habitat Assessment (EFHA) and request for consultation for the Hawaii portion of the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement/Overseas Environmental Impact Statement.

The HCTT Hawaii EFHA (enclosure) will be forwarded to the appropriate staff electronically based on previous requests for digital submission only.

We appreciate your continued support in helping the U.S. Navy meet its environmental responsibilities. If there are any questions on this request, my point of contact is Ms. Maria Carnevale. She may be reached via e-mail at [redacted] or via phone at [redacted]

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: HCTT Hawaii EFHA

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 · Fax: (808) 725-5215

Captain John H. Beattie
Deputy Fleet Civil Engineer
Commander, United State Pacific Fleet
250 Makalapa Drive
Pearl Harbor HI 96860-3131

May 28, 2025

Captain Beattie,

The National Marine Fisheries Service, Pacific Islands Regional Office (PIRO), received Commander, U.S. Pacific Fleet's (hereafter Department of the Navy (DON)) submission for an Essential Fish Habitat (EFH) consultation for the Hawaii-California Training and Testing Phase 4 on February 3, 2025. NMFS appreciates the opportunity to review the proposed training and testing actions pursuant to the EFH provisions (Section 305(b) as described by 50 CFR 600.920) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1855(b)). After reviewing the consultation enclosures, we have determined that there could be adverse effects to EFH from the proposed action. We are providing conservation recommendations pursuant to the EFH provision within Section 305(b)(2) of the MSA that, when followed, along with the standard operating procedures and mitigation measures you provided will help ensure that most adverse effects, if any, to EFH are avoided and minimized.

Consultation History

As a Cooperating Agency, NMFS reviewed the Notice of Intent (NOI) to publish an Environmental Impact Statement (EIS) and two drafts of the EIS prior to consultation. PIRO provided comments directly to DON and Naval Facilities Engineering Systems Command, Pacific on January 29, 2024. Following the NOI, NMFS commented on the drafts of the EIS (DEIS) through a central document commenting system provided by the DON. NMFS Headquarters coordinated and vetted the comments coming in from several offices within NMFS.

Comments on DEIS version 2 (V2) were provided on June 10, 2024, and PIRO commented on sections throughout the document. Some sections that were available for comment later than the main release of the document were reviewed by June 13, 2024.

Comments that required discussion were addressed in a Tiger Team meeting on June 27, 2024. Appendix A of the DEIS was open for comment for later than other sections. PIRO finished commenting on that document on June 30, 2024.

PIRO provided comments on many sections, including the draft EFH Assessment (EFHA), of the DEIS V3 on January 7, 2025. A redrafted EFHA was provided by the DON on January 27, 2025. A follow-up call to discuss significant comments and how they were addressed occurred on January 28, 2025. In response to the discussion, PIRO provided a series of requests for information (RFIs) on January 29, 2025, and a recommended paper from primarily scientific literature.

On February 3, a consultation package was submitted with a request to initiate consultation. Included in the submission were a cover letter, a copy of a letter from a July 2022 reinitiation of an EFH consultation for submarine training around Maui, a redrafted EFHA, a redline version of the new EFHA, answers to the RFIs, and a Geographic Information System database associated with the proposed action. Additional supporting documents were submitted on February 5, 6, 10, and 13, 2025. An issue that lingered was the inclusion of the installation, use, and maintenance of an underwater landing platform to facilitate underwater vehicle pilot proficiency training close to the Puuloa underwater detonation (UNDET) range close to Pearl Harbor. PIRO took a position supported by the Army Corps of Engineers that the platform would require individual permitting. The DON decided on April 1, 2025 that the platform, also known as a Host Simulator, is no longer part of the proposed action; it was removed from the HCTT action in Hawaii.

The description, analysis, and determination below do not include consideration of the Host Simulator. None of the guidance or determinations made in this consultation apply to the installation, use, and maintenance of that platform. PIRO expects that the DON will address the Host Simulator in a separate consultation.

HCTT Action Description

Operating Area

The majority of training and testing in the vicinity of Hawaii will occur in the Hawaii Range Complex (HRC), which is an area that immediately surrounds the Main Hawaiian Islands (MHI). The HRC consists of 115,000 square nautical miles (NM^2) of special use airspace and 235,000 NM^2 of sea and undersea space, including 1,100 NM^2 of instrumented underwater ranges at the Pacific Missile Range Facility (PMRF). The HRC is roughly a square with an extended area north of Kauai to accommodate training on the undersea ranges north of PMRF. There are areas within the HRC where specific military readiness activities occur; these areas are generally centered around the islands of Kauai, Oahu, and Maui. The HRC is mostly contained, but not entirely, in the U.S. Exclusive Economic Zone (EEZ).

A Temporary Operating Area (TOA), extending north and west from the island of Kauai and comprising over 2 million NM^2 of air and sea space, is used for Research,

Development, Test & Evaluation activities such as missile testing by PMRF. For safety purposes, PMRF requests use of the airspace within the TOA from the Federal Aviation Administration during times of missile defense testing. Training and testing in the TOA can include live missile firing associated with ballistic missile defense exercises and vessel transits. Together the HRC and the TOA make up the Hawaii Study Area (HSA). Maps of the HRC and HSA boundaries can be found in the 2024 Hawaii-California Training and Testing Draft EIS/Overseas EIS (OEIS) (U.S. Navy 2024).

Training and Testing

The proposed action includes two categories of military readiness activities training and testing, within the HRC. The Navy, U.S. Air Force, U.S. Marine Corps, and U.S. Coast Guard routinely train in the HRC in preparation for national defense missions. Typical training and testing activities and exercises covered in the DEIS/OIS include shore-based gunnery exercises, anti-submarine warfare, missile exercises, amphibious landings, electronic warfare exercise, surface warfare, mine warfare (additional details below), air warfare, acoustic and oceanographic science exercises, unmanned systems activities, vessel movement and evaluations, testing of maritime communications, and ship to shore transport of personnel, equipment and supplies. The HCTT EIS/OEIS also describes a number of major training exercises such as Composite Training Unit Exercises, Integrated Air Missile Defense Exercises, and Large Amphibious Exercises that are expected to take place within the HRC. These training and testing activities are fully described within the 2024 Hawaii-California Training and Testing Draft EIS/OEIS (U.S. Navy 2024).

Proposed Modernization and Sustainment of Ranges

The DON's training and testing ranges provide the air, sea, and undersea space necessary for personnel to conduct live training and testing. As technology changes, weapons and systems evolve to provide improved capabilities. Often those new capabilities require modifications to the range to allow for full utilization of the new technology. In addition, existing components of the ranges require maintenance or replacement as they come to the end of their service life. These modernization and sustainment actions are described in this section.

Undersea ranges provide essential mission readiness capabilities. Range sustainment includes maintenance of systems and associated components. Maintenance may include, but is not limited to, inspections, system replacement to extend service life (e.g., anodes and clamps), replacement of corrosion inhibitor solutions, and catastrophic repairs. Sustainment activities at undersea training ranges may require the use of divers, vessels, and unmanned underwater vehicles. Vessels may be required to anchor to the seafloor and would comply with the mitigation measures described in Table 2-11. Activities may take up to several weeks at a time.

As part of this action, DON may also need to facilitate the repair of approximately 16.2 nautical miles (NM) of undersea fiber optic cable and communication units at the existing Wave Energy Test Site (WETS) off the coast of Kaneohe Bay at a depth of 13123.36 feet (ft) (referenced as Hawaii Cable Project Phase 1), and perform a similar repair off the west coast of Kauai (referenced as Hawaii Cable Project Phase 1I).

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DON will also need to replace mine countermeasure (MCM) targets across the HRC every 1-2 years. Depending on the training scenario, mine installation could consist of one or two mines or involve an entire minefield including a mix of 30 or more bottom and tethered mine shapes. Existing and proposed minefield locations include: Naval Defense Sea Area, Puuloa Underwater Range, Ewa Beach Training Minefield, Barbers Point Underwater Range, Barbers Point Harbor to Lighthouse Training Area, Kaneohe Bay, and Bellows Beach off the island of Oahu; Waiapuaa Beach, and Niihau Kingfisher Range off the island of Kauai; and Kahoolawe Sub Training Minefield, Penguin Bank, Kalohi Channel, Pailolo Channel, Maui Basin, and Alalakeiki Channel off the island of Maui. Minefields and mine training areas occur from the very shallow water (0–40 ft) to deep water (>500 ft). MCM target shapes are deployed from stationary ships, with the anchor pulling the mooring line and MCM target down to the desired depth with an accuracy of approximately 100 yards.

Other temporary training areas can be established by installing devices that could include hydrophones anchored to the seafloor similarly to anchored mine training shapes or other subsea/seabed targets. When training or testing is completed in the temporary range, or when onboard batteries run out, the instrumentation is recovered and where feasible, anchors are removed along with the mine shape.

Activities Requiring Future EFH Coordination

Several construction related activities described within the HCTT EFHA will require a separate, individual, abbreviated consultation to ensure that NMFS has the mandatory content required under MSA to initiate and complete the consultation for each action. Discussions between the DON and PIRO determined that these activities would not be included in the HCTT action. Therefore, this consultation will not cover installation and maintenance of one or more platforms in the HST. Substantial changes to the cable repair plans (i.e., if work needs to happen in water shallower than 100 ft, or if the MCM locations, materials, or deployment processes change substantially those actions will also likely require an additional consultation.

Essential Fish Habitat

The marine water column from the surface to a depth of 3,281 ft from the shoreline to the outer boundary of the EEZ (200 NM), and the seafloor from the shoreline out to a depth of 2,296 ft around each of the Mariana Islands, have been designated as EFH. As such, the water column and bottom and all surrounding waters and submerged lands around Apra Harbor are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Regional Fishery Management Council's Pelagic and Mariana Archipelago Fishery Ecosystem Plans and amendments (WPFMC 2009a, 2009b, 2018). The MUS and life stages found in these waters include eggs, larvae, juveniles, and adults of Bottomfish and Pelagic MUS. Specific types of habitat considered as EFH within, or adjacent to, the proposed project area include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate,

lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean. Additionally, high priority or high sensitivity areas can also be designated as Habitat Areas of Particular Concern (HAPC's) and warrant additional scrutiny during the consultations process which is important in this case because bottom HAPC's occur throughout the HRC.

Adverse Effects

NMFS categorizes adverse effect types in four categories: temporary, short-term, long-term, and permanent. The severity is measured by intensity and spatial extent of the stressor, while the adverse effect type is based on the recovery rate from the impact and the pervasiveness of the impact at the ecological scale. Standard EFH effects analysis normally will use the most sensitive and hard-to-replace EFH resources based on the recovery time back to the baseline or the highest expected stable state. Considering recruitment and growth rates of impacted fauna, oceanographic and geomorphologic features, and anticipated future conditions, living EFH resources which are altered or lost can be quantified as a debt. Non-living resources can also be adversely affected and lost, such as removal or impairment of features that serve as shelter. These types of effects tend to be permanent.

The thresholds for what effects are considered adverse to EFH is highly variable among the species managed by the WPFMC and NMFS. For example, multiple species included in each of the MUS in all FEPs have strong associations with the water column, especially the water surface in their egg and larval life stages. Those species typically have eggs that float very close to the surface (buoyant) and/or become planktonic as larvae. Therefore, physical disturbance of the surface (e.g., boat propeller churning) may be an adverse effect to the water column, which may reduce the fecundity of both MUS, their prey, and habitat forming organisms (e.g., coral). Both power generation studies (Schlezinger et al. 2013) and those that investigate the impacts of boating on zooplankton (Bickel et al. 2011) provide useful proxies in this respect. However, the severity of those potential adverse effects are dependent upon many factors that are complex to predict, including but not limited to: the reproductive cycles of a diverse assemblage of organisms potentially affected, oceanographic conditions (e.g., tides, prevailing currents, nearshore eddies), and the frequency of and forces generated by the vessels being operated.

The proposed HCTT activities may result in adverse effects to EFH including physical impacts to benthic communities, enhanced sedimentation and turbidity, increases in acoustic impacts, explosion and energy related impacts, the introduction of contaminants, and the introduction and propagation of invasive species. Any proposed activity that occurs within designated EFH may cause the following adverse effects, described generally in this section. The extent and severity of individual stressors will be highly variable across the spectrum of HCTT activities, and the adverse effects may not be consistent from year to year even though the activities remain the same, due to external factors and cumulative effects.

Physical Impacts to Benthic Communities: Physical damage to coral or coral reefs is often associated with the breaking of colonies or in the form of abrasion. The amount of damage is dependent on many factors, but is mostly due to the nature of the physical force and the types of corals being impacted (Storlazzi et al. 2005, Shimabukuro 2014). Corals, which are primarily responsible for the structural complexity of coral reefs, are particularly vulnerable to physical damage because their slow-growing carbonate skeleton is relatively brittle and their polyps are easily damaged. In general, lobate, encrusting, and other massive colony morphologies tend to withstand breakage better than foliose, table, plating, and branching morphologies; more fragile forms tend to have higher growth rates (Rützler 2001). Reduction of topographic complexity in the habitats of the coral reef ecosystem reduces biodiversity and productivity (Alvarez-Filip et al. 2009).

Unintentional physical damage could occur during most of the proposed HCTT activities including: gunnery activities, anti-sub warfare, missile exercises, amphibious landings, electronic warfare, surface warfare, mine warfare, air warfare, acoustic and oceanographic science activities, unmanned systems, and vessel movement and activities as stressors under this category.

Vessels, military expended materials (MEM), and seafloor devices, are the most likely to have direct impacts to the benthic community. Vessels are used in nearly all training and testing activities and include multiple types of vessels such as aircraft carriers, surface combatant, amphibious warfare ships, support crafts, and submarines. MEM include: non-explosive practice munitions, fragments from high explosive munitions; and expended materials other than ordnance, such as sonobuoys, ship hulls, expendable targets and aircraft stores (fuel tanks, carriages, dispensers, racks, carriages or similar types of support systems on aircraft which could be expended or recovered). Materials that are not recovered will result in marine debris that will either sink to the bottom or float and be transported by wind and ocean currents. Debris that sinks will result in permanent physical impacts to benthic habitat. Although ingestion rates are lower than sea turtles and marine mammals, ingestion of marine debris has been documented in approximately 40 fish species (CBD 2012). Seafloor devices are items that are deployed onto the seafloor and may later be recovered, including moored mine shapes, anchors, bottom placed instruments, and robotic vehicles referred to as "crawlers." Seafloor devices are either stationary or move very slowly along the bottom. Physical impacts to soft bottom will be short-term, including an increase in turbidity, whereas physical impact changes to hard bottom will be permanent.

Sedimentation and Turbidity: Suspended sediment can elicit short- and long-term responses from aquatic organisms depending on the quantity, quality, and duration of suspended sediment exposure (Kjelland et al. 2015, Philipp and Fabricius 2003). Coral reef organisms are easily smothered by sediment and can experience both physiological and lethal responses to concentrations below 10 milligrams (mg)/cm^2/day and 10 mg/Liter (L) (Tuttle and Donahue 2022). Adverse effects from deposited sediment can occur as low as 1 mg/cm^2/day for larvae and 4.9 mg/cm^2/day for adult tissue (Tuttle and Donahue 2022). Suspended sediment levels of 10 mg/L can lead to reduced growth rates and levels of 3.2 mg/L can cause bleaching and tissue mortality (Tuttle and Donahue 2022), although corals show considerable interspecific variability. Increased turbidity can cause

changes in fish behavior, including altered predator-prey relationships (Higham et al. 2015).

Unintentional physical damage could occur during several of the proposed HCTT activities including: amphibious landings, electronic warfare, surface warfare, mine warfare, unmanned systems, and vessel movement and activities as stressors under this category.

Acoustics and Noise: Noise has a broad range of potential effects, especially when it is very loud and has high amplitude (Casper et al. 2016), or when it is less intense but long-lasting (Popper and Hastings 2009). Behavioral changes can occur, resulting in animals leaving feeding or reproduction grounds (Slabbekoorn et al. 2012) or becoming more susceptible to mortality through decreased predator-avoidance responses (Simpson et al. 2016). Less intense but chronic noise can cause a general increase in background noise over a large area. Chronic noise will not likely result in mortality, but may mask biologically important sounds and alter the natural soundscape, cause hearing loss, and/or have an adverse effect on an organism's stress levels and immune system (Minton 2017). Masking of the normal reef sounds by artificial sounds may have an impact on species abundances and numbers on coral reefs. Research has shown that larvae of several reef fish families preferentially select traps emitting high frequency sounds over traps emitting sounds similar in frequency to normal background frequencies (Simpson et al. 2008). Studies on an invertebrate species has shown that chronic exposure to noise may lead to increased metabolic rates, causing a reduction in growth and reproduction (Lagardère 1982). Recent advances in passive acoustic technology and analysis indicates that coral reef larvae are using lower frequency sounds such as those made by grunting fishes. These daily sounds are primarily produced at night and during dusk and dawn. However, these types of sounds are produced most abundantly during spawning. Corals exposed to enhanced anthropogenic noise, including that from vessel engines, will have disrupted settlement of their planulae (Lecchini et al. 2018).

DON includes gunnery activities, anti-sub warfare, missile exercises, surface warfare, mine warfare, acoustic and oceanographic science activities, unmanned systems, and vessel movement and activities as stressors under this category.

Active sonar is most likely to have acute impacts on benthic organisms while vessel activities are most likely to have chronic effects due to regular exposure in high-use areas. The DON uses sonar (underwater sound) to navigate, communicate, or detect underwater objects. Active sonar emits sound waves which reflect off objects and return to the receiver whereas passive sonar uses listening equipment to pick up underwater sounds. Vessels will be used for the majority of all proposed activities. Noise will be discharged from vessel engines during maneuvers and staging. Vessel noise can adversely affect fish and coral recruitment (see below). The use of sonar and weapons noise may result in temporary acoustic impacts to water column EFH, as it will alter the natural soundscape affecting the quality of water column EFH.

Invasive Species: Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. Species can be introduced

to new biogeographies, typically via transport on vessel hulls or in ballast water. Invasive species rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific. Due to the variety, size, and range of vessels involved within HCTT activities, and the known aquatic invasive species (AIS) recently identified within Pearl Harbor (e.g., *Unomia stolonifera* and *Anemonia manjano)*, vessel movements to and from Oahu mark a new existential threat to the reefs of Hawaii and across the Pacific. NMFS has put forward conservation recommendations below to help DON reduce the risk of spreading AIS specifically from Pearl Harbor.

Contaminants: The use of vessels, heavy equipment, and munitions, increases the risk of chemicals being introduced to the marine environment from spills, releases, grounding, and overboard events. The implementation of BMPs is essential to avoiding and managing chemical contamination. Contaminants can have a variety of lethal and sublethal effects on habitat-forming marine organisms, including alteration of growth, interference with reproduction, disruption of metabolic processes, and changes in behavior. These adverse effects can cascade through ecosystems, altering species composition and ecosystem functions and services. Some pollutants are environmentally persistent and can take years or even decades to biodegrade, and others can bioaccumulate or biomagnify through the food chain, eventually posing a direct threat to human health. Contaminant concentrations in fishes are linked to locations with increased urbanization and military history (Nalley et al. 2021, 2023).

When not properly maintained, equipment could release contaminants (e.g., oil, fuel) into the marine environment. Impacts from contaminants in the marine environment are dependent on how long chemical compounds persist and their tendency to bio-accumulate in the food web (van Dam et al. 2011). An increase in nutrients, pollutants, and contaminants in the marine environment can reduce fitness and cause mortality of exposed organisms. Some pollutants are environmentally persistent and can take years or even decades to biodegrade (Minton 2017). Nearshore species may spend a portion of their lives in coral reefs, but many of these fish and invertebrates are pelagic spawners (Mitcheson and Colin 2011) or broadcast spawners (see, for example, Padilla-Gamiño and Gates 2012). Eggs and larvae are sensitive to water quality changes and can uptake contaminants (Singh et al. 2022). The eggs and larvae of pelagic and broadcast spawners spend time in the plankton community where they can be mobilized far off shore (Cowen and Sponaugle 2009) and bring nutrients and accumulated contaminants to pelagic and benthic communities, including bottomfish and pelagic MUS.

Unintentional contamination could occur during several of the proposed HCTT activities including: gunnery activities, anti-sub warfare, missile exercises, electronic warfare, surface warfare, mine warfare, air warfare, unmanned systems, vessel movement and activities, but may be most likely for those activities involving the use of Chaff.

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Chaff is used to obscure ships and aircraft from radar guided systems. It is typically composed of an aluminum alloy coating on glass fibers of silicon dioxide. Chaff, which is stored in canisters, is either dispensed from aircraft or fired into the air from the decks of surface ships when an attack is imminent. Cartridges or projectiles contain millions of fibers. The glass fibers create a radar cloud that masks the position of the ship or aircraft. When deployed, a diffuse cloud of fibers is formed that is undetectable to the human eye. Chaff is a very light material, similar to fine human hair. It can remain suspended in air anywhere from 10 minutes to 10 hours and can travel considerable distances from its release point, depending on prevailing atmospheric conditions (Arfsten et al. 2002). Doppler radar has tracked chaff plumes containing approximately 900 g of chaff drifting 200 mi. from the point of release, with the plume covering greater than 400 mi. (Arfsten et al. 2002).

Explosion and Energy Stressor: Underwater explosive and other impulsive activities include ordnance and munitions such as projectiles, missiles, bombs, and other munitions (e.g., demolition charges). Explosives detonated near the surface would result in a shock wave and recurring pressure waves in the water column. Although most explosives would be at or below the water surface, charges associated with mine neutralization could occur near the ocean bottom. Temporary physical and acoustic effects to water column EFH will occur from explosives detonated near the surface. Explosives detonated near the bottom may result in physical impacts to benthic communities, increase in turbidity (through disturbance of seafloor), and increase in acoustic impact. Physical impacts to soft bottom will be short-term, including an increase in turbidity, whereas physical impact changes to hard bottom will be permanent. Temporary effects to fish may be change in fish behavior or distribution, damage to swim bladder or kidney of fishes (Jenkins et al. 2023), and permanent effects may be fish mortality.

Electromagnetic devices use magnetic influence in activities such as mine neutralization and mine countermeasure activities. The majority of the activities include towed or unmanned mine warfare systems that mimic the electromagnetic signature of a passing vessel. These may result in temporary behavioral effects to susceptible fish and invertebrates.

Explosion and energy related impacts to EFH could occur during several of the proposed HCTT activities including: anti-sub warfare, missile exercises, surface warfare, mine warfare, acoustic and oceanographic science activities, and vessel movement and activities as stressors under this category.

Cumulative Effects: Many effects in marine ecosystems have long durations due to slow ecosystem recovery (e.g., corals), activities proposed today could result in significant and irreversible damage to EFH in coming decades, especially where impacts are chronic in nature. Individual adverse effects often compound, and interact in ways that increase the overall impact (Brown 1997, Negri and Hooganbloom 2011). Crain et al. (2008) reviewed over 200 studies examining cumulative effects for multiple stressors in intertidal and nearshore marine ecosystems to elucidate general patterns in cumulative stressor effects. In 62% of all cases, interactions between stressors resulted in an adverse effect on the species or ecosystem that was at least additive.

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The amount of Navy materials being deposited (e.g., MEM and chaff) is planned to continue for the foreseeable future. At an unidentified inflection point adverse effects to EFH from the continual deposition of these materials over the same footprint will be reached. As that point is approached it will become more difficult to mitigate and restore ecological functions and services. In addition, there may be cumulative adverse effects from personnel usage and unexpected vessel groundings in the absence of proper contingency planning, including resources for regular and on-the-spot survey damage assessments at all sites used for amphibious assaults.

NMFS Concerns

NMFS is concerned about past, present, and future adverse effects to EFH resources from all of the stressors mentioned above, especially the potential spread of AIS, direct benthic impacts, and cumulative effects associated with the long-term and regular release of MEM and Chaff.

AIS: Most of the actions proposed within the HCTT involve the movement of vessels, equipment, and people, all of which are vectors for the transportation of invasive species. The Joint Region Marianas (JRM) has recently completed comprehensive terrestrial and marine biosecurity plans as part of the JRM Integrated Natural Resource Management Plan, which, when followed, is an invaluable resource in preventing the spread of invasive species. It is important to note that Pearl Harbor now hosts organisms that pose an existential threat to neighboring reefs, which is not something that JRM needed to incorporate into their plan because Apra Harbor does not currently pose a similar threat or host similar species. DON needs to take extra precautions to avoid the high risk AIS currently residing in Pearl Harbor and take extra steps to ensure that ROVs, vessel ballast, and other likely vectors are being addressed aggressively.

Direct Benthic Impacts: HCTT poses a risk to sensitive and hard-to-replace benthic EFH (i.e., corals and seagrass) through both intentional activities (e.g., deployment of MCM and amphibious landings), and unintentional activities (e.g., vessel groundings and warfare activities). DON can add standard operating procedures and BMPs to minimize the risk to corals and seagrass during planned deployment and landing activities and build in more comprehensive response strategies to ensure that plans and resources are available to respond whenever there is an unintended incident.

MEM and Chaff: The discharge of marine debris associated with MEM can adversely affect EFH. The effects have been occurring incrementally from past training and testing, and those effects can be expected to accumulate over time (i.e., years) from ongoing activities associated with the proposed action. The release of MEM, such as explosive fragments (e.g., from missiles, bombs, and other projectiles), expendable targets, other munitions, metals, flares, chaff, and plastics, will introduce marine debris into the environment. Impact pathways associated with marine debris include ingestion, entanglement, smothering, and alteration of the benthic invertebrate community (Kühn et al. 2015) and habitats, such as reefs (Carvalho-Souza et al. 2018). The EFHA estimates the impact area for MEM to be as high as 61.7 acres per year across the HRC.

EFH Determination

The DON determined that the proposed activities will have minimal and short-term adverse effects on EFH due to sonar, explosions, physical disturbance, and contamination. NMFS determines that even with the avoidance, minimization, and offset measures proposed by the DON, the proposed action could still have long-term to permanent adverse effects to EFH associated with the implementation of the proposed mitigation strategies, unexpectedly low survivorship for translocated corals, or resulting from complications that may delay the successful transplantation of CCA starters at the breakwater or the success of seagrass restoration at Dadi beach.

CONSERVATION RECOMMENDATIONS

Conservation Recommendation 1: If bottom crawlers or other bottom-travelling unmanned vehicles are used in Pearl Harbor, restrict those crawlers from going south of Lima Landing to avoid spreading invasive benthic species outside Pearl Harbor. Also, do not allow crawlers or other bottom-travelling unmanned vehicles, or divers, to move between the Pearl Harbor Main Channel area where *U. stolonifera* is present or the southwest side of Ford Island where *A. manjano* is present and other parts of the harbor. Any unmanned underwater vehicle (UUV), or small manned underwater vehicle that grounds or comes to rest in the Main Channel of Pearl Harbor between Tripod Reef and the south end of Ford Island should not proceed out of Pearl Harbor after touching the substrate. Instead the vehicle should be inspected and cleaned to prevent the movement of invasive species outside Pearl Harbor.

Conservation Recommendation 2: Eliminate the potential of transmitting invasive species by cleaning all bottom crawlers and other bottom travelling unmanned vehicle operating in Pearl Harbor using one of the following ways:

- a 1:52 dilution of commercial bleach in freshwater,
- a 3 percent free chlorine solution, or
- a manufacturer's recommended disinfectant-strength dilution of a quaternary ammonium compound in "soft" (low concentration of calcium or magnesium ions) freshwater.

and dry the equipment before using it again for other testing and training activities outside of Pearl Harbor.

Conservation Recommendation 3: If manned or unmanned vehicles take on ballast water (saltwater or freshwater) in Pearl Harbor, do not release that water into the nearshore water within the HSA. The ballast exchange rules used by larger vessels to control and limit invasive species transmission should be followed by the smaller manned or unmanned vehicles that operate in Pearl Harbor.

Conservation Recommendation 4: Utilize pre-programed routes or develop the capability for bottom crawlers to detect and avoid sensitive benthic habitat such as coral colonies and seagrass beds.

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Conservation Recommendation 5: During deployment of MCM, and given the stated margin of error, ensure that the target drop location is at least 100 yards away from hardbottom substrate in the downcurrent direction to avoid direct impacts with coral.

Conservation Recommendation 6: DON should work with NMFS and local agencies to develop a vessel grounding response plan that includes a funding mechanism and protocols for expedited vessel removal, damage assessment surveys, and strategies to offset any unavoidable loss to EFH resources (e.g., corals, seagrass, etc.). This would also inform and minimize potential cumulative adverse effects from unexpected groundings as HCTT continues into the future.

Conservation Recommendation 7: Develop a method and process to accurately track the amount and location where MEM is expended in the HSA. This recommendation covers small caliber weapons to missiles. Make an estimate of the accumulation of MEM in areas where training goes on around Kauai, Oahu, and Maui and in the training areas W186 through W196.

Conservation Recommendation 8: NMFS recommends that the DON either provide significant fiscal support for marine debris cleanup being executed by a non-profit organization or the state of Hawaii in the HRC or develop and execute a significant debris cleanup project at a DOD installation. The amount of fiscal support or cleanup should be commensurate with the amount of debris being introduced to the marine environment. NMFS is amenable to various approaches and is willing to discuss these options with the DON in more detail.

Conservation Recommendation 9: Avoid the use of chaff and/or maximize the distance of training exercises around Penguin Banks to the greatest extent possible from May to September. This shallow bank is a known spawning location of at least one important bottomfish, uku (*Aprion virescens*) (Nadon et al. 2020; Ayers 2022, Suca et al. 2025), that is a designated MUS in the Hawaii FEP (WPFMC 2009b). Uku spawn on Penguin Banks from May to September. Mortality during the larval phase is high for fish (Houde 1987) and that acts as a major selection pressure during the larval stage (Marshall and Morgan 2011). It is important to avoid potential adverse impacts to the spawning and development of fish larvae of Uku.

Conclusion

PIRO greatly appreciates the efforts of DON to comply with the EFH provision of the MSA for your proposed training and testing in the HSA. Please be advised that Section 305(b)(4)(B) of the MSA (and further described by 50 CFR 600.920) to implement the EFH provisions require that Federal agencies provide a written response to this letter within 30 days of receipt; a preliminary response is acceptable if more time is needed. The final response must include a description of measures to avoid, minimize, or offset effects to EFH from the proposed activities. If the response is inconsistent with our EFH

conservation recommendations, an explanation for not implementing them must be provided at least 10 days prior to the final approval of the proposed activities.

Please contact Steve Mckagan at [redacted] or [redacted], with any comments, questions, or concerns. Thank you for coordinating with us on your consultation.

Sincerely,

Dawn Golden

Dawn Golden
Assistant Regional Administrator
Protected Resources Division

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DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0477
June 26, 2025

Ms. Dawn Golden
Assistant Regional Administrator, Protected Resources Division
National Marine Fisheries Service, Pacific Islands Regional Office
1845 Wasp Boulevard, Bldg. 176
Honolulu, HI 96818

Dear Ms. Golden:

SUBJECT: NAVY REPLY TO ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS FOR HAWAII PORTION OF HCTT (PHASE IV)

The United States (U.S.) Department of Navy (Navy) (including the U.S. Marine Corps), with joint-federal agencies U.S. Coast Guard, U.S. Air Force, and U.S. Army (collectively referred within as Action Proponents [APs]) received the National Marine Fisheries Service (NMFS), Pacific Islands Regional Office's (PIRO) letter dated May 28, 2025. The letter provides PIRO's consultation determination and includes Conservation Recommendations (CRs) for the avoidance and minimization of impacts to Essential Fish Habitat (EFH) associated with the proposed military readiness activities occurring within the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement (EIS)/Overseas EIS (OEIS) (U.S. Navy 2024), Study Area.

In the discussion of the project's EFH consultation history, PIRO states that the installation, use and maintenance of an underwater platform, known as the Host Simulator, is no longer part of the proposed action. To clarify, the Navy agreed to remove the Host Simulator from the Hawaii EFH Assessment on April 1, 2025 to enable PIRO to initiate the HCTT consultation. A forthcoming benthic site survey will respond to PIRO's requests for information on this specific activity. As such, the Navy intends to seek a separate EFH consultation on the Host Simulator activity at a future date. The Host Simulator activity remains part of the proposed action, as described in the HCTT EIS/OEIS (U.S. Navy 2024), and other associated regulatory processes.

The Navy would also offer additional clarification of several points made within PIRO's letter:

a. Regarding the information within the paragraph "*Activities Requiring Future EFH Coordination,*" the Host Simulator is the only activity within the HCTT proposed action requiring further coordination. For all other activities, the APs will follow all EFH consultation reinitiation triggers for the proposed action, including if there are substantial changes made to the proposed action and/or if new information becomes available that affects the basis for PIRO's EFH conservation recommendations, as appropriate.

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b. Though mentioned within PIRO's determination section, the translocation of coral and seagrass restoration at Dadi Beach is not included in the proposed action, nor part of the study area for this project.

c. There is reference to a separate DoD Region's Integrated Natural Resource Management Plan regarding Aquatic Invasive Species (AIS) and how Pearl Harbor must handle AIS issues. Navy Region Hawaii is extremely active in addressing AIS at Pearl Harbor. The Navy is undertaking a comprehensive effort, in partnership with government agencies and industry, to address invasive Octocoral coral. This includes actively removing existing populations, working to prevent further spread and new introductions, and investing in research to develop technology for early detection and rapid response capabilities.

d. The amphibious landings in Hawaii occur only in a few locations (Marine Corps Base Hawaii, Marine Corps Training Area Bellows, and Waiapuaa Bay on Kauai) under routine best management practices to include spill preparedness.

In accordance with Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), this letter provides the Navy's response to the CRs.

NMFS CR #1: *If bottom crawlers or other bottom-travelling unmanned vehicles are used in Pearl Harbor, restrict those crawlers from going south of Lima Landing to avoid spreading invasive benthic species outside Pearl Harbor. Also, do not allow crawlers or other bottom-travelling unmanned vehicles, or divers, to move between the Pearl Harbor Main Channel area where U. stolonifera is present or the southwest side of Ford Island where A. manjano is present and other parts of the harbor. Any unmanned underwater vehicle (UUV), or small manned underwater vehicle that grounds or comes to rest in the Main Channel of Pearl Harbor between Tripod Reef and the south end of Ford Island should not proceed out of Pearl Harbor after touching the substrate. Instead the vehicle should be inspected and cleaned to prevent the movement of invasive species outside Pearl Harbor.*

Navy Response to CR#1: The APs do not agree to follow this recommendation. The proposed action does not include the use of bottom crawlers or bottom-travelling unmanned vehicles in Pearl Harbor, therefore this CR is not applicable to these proposed activities. Regarding divers, the APs already implement the following Best Management Practices (BMPs) to minimize potential negative impacts by AIS:

a. All physical contact and disturbance to the benthos and any AIS present shall be prevented whenever possible.

b. Any equipment, gear, or material used in water with known AIS, shall be dried for 48 hours before moving to an uncontaminated area or cleaned prior to mobilization.

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c. No movement/removal of benthos substrate, water, or AIS itself from a known AIS infested area to an uncontaminated area shall take place. Any removal of substrate or AIS shall be properly disposed of so that it cannot spread to uncontaminated areas.

d. In-water equipment will be locally sourced thus reducing the risk of introducing non-native species to the greatest extent practicable. If any equipment must be brought from outside the Hawaiian Islands region, then the appropriate prevention measures will be followed.

e. Do not disrupt on-going AIS removal efforts.

f. Visually inspect gear, wetsuits and boats after an underwater mission for coral fragments (don't return into the water).

g. Be aware of buoyancy so that gear is not dragging on reef organisms.

h. Boats used during training will comply with the no wake zone in the area where AIS is present in Pearl Harbor.

i. Maintain awareness about AIS distribution.

j. If AIS is observed, contact Navy Region Hawaii Environmental staff.

***NMFS CR #2**: Eliminate the potential of transmitting invasive species by cleaning all bottom crawlers and other bottom travelling unmanned vehicle operating in Pearl Harbor using one of the following ways:*

a. a 1:52 dilution of commercial bleach in freshwater,

b. a 3 percent free chlorine solution, or

c. a manufacturer's recommended disinfectant-strength dilution of a quaternary ammonium compound in "soft" (low concentration of calcium or magnesium ions) freshwater.
and dry the equipment before using it again for other testing and training activities outside of Pearl Harbor.

Navy Response to CR#2: The APs do not agree to follow this recommendation. The proposed action does not include the use of bottom crawlers or bottom-travelling unmanned vehicles in Pearl Harbor, therefore this CR is not applicable to these proposed activities.

***NMFS CR #3**: If manned or unmanned vehicles take on ballast water (saltwater or freshwater) in Pearl Harbor, do not release that water into the nearshore water within the Hawaii Study Area (HSA). The ballast exchange rules used by larger vessels to control and limit invasive species transmission should be followed by the smaller manned or unmanned vehicles that operate in Pearl Harbor.*

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Navy Response to CR#3: The APs do not agree to follow this recommendation. The APs offer the following clarification on existing operations:

a. Smaller manned or unmanned underwater vehicles do not use a water intake/discharge ballasting system.

b. The Navy implements standard operating procedures and best management practices to control and limit the transmission of invasive species through ballast water. As described in the HCTT Standard Operating Procedures and the BMPs above, ballast water exchange during military readiness activities will comply with the Navy's Environmental Readiness Program Manual (OPNAV M-5090.1). These requirements include exchanging the ballast water outside 200 NM from nearest land. If that is not possible, there are options for exchanging at least 50 or 12 NM from land. All of these are well outside the "nearshore water" within the HSA.

NMFS CR #4: *Utilize pre-programed routes or develop the capability for bottom crawlers to detect and avoid sensitive benthic habitat such as coral colonies and seagrass beds.*

Navy Response to CR#4: The APs agree to follow this recommendation. Bottom crawlers move very slowly along the seabed in a controlled area that is either preprogrammed or manually controlled. Avoidance of sensitive habitats is achievable through the mission/route planning process.

NMFS CR #5: *During deployment of MCM, and given the stated margin of error, ensure that the target drop location is at least 100 yards away from hardbottom substrate in the downcurrent direction to avoid direct impacts with coral.*

Navy Response to CR#5: The APs do not agree to follow this recommendation. As stated in the EFHA, the Action Proponents will avoid positioning precisely placed non-explosive seafloor devices near hardbottom substrate by the largest distance that is practical to implement based on mission requirements. The Navy's mitigation includes a buffer of 350 yards from shallow-water coral reef and precious coral beds for seafloor devices, which includes mine warfare training shapes (except in designated established areas of the Hawaii Range Complex, such as Barbers Point Underwater Range, Ewa Training Minefield, and Puuloa Underwater Range, where these features will be avoided to the maximum extent practical). For the category of hardbottom substrate, the Navy's mitigation measures require seafloor devices, including MCM targets, to be placed a minimum of 350 yards away from hardbottom substrate with an exception for precise placement of seafloor device items.

NMFS CR #6*: Department of Navy (DON) should work with NMFS and local agencies to develop a vessel grounding response plan that includes a funding mechanism and protocols for expedited vessel removal, damage assessment surveys, and strategies to offset any unavoidable loss to EFH resources (e.g., corals, seagrass, etc.). This would also inform and minimize potential cumulative adverse effects from unexpected groundings as HCTT continues into the future.*

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Navy Response to CR#6: The APs do not agree to follow this recommendation. Vessel grounding is not a reasonably foreseeable action associated with the HCTT proposed action. It has been over 15 years since Navy had a vessel run aground in the Hawaiian waters. Vessels are operated with full consideration of safe navigation, and vessel and crew safety. Navy vessels are required to operate in accordance with applicable navigation rules, such as the Inland Navigation Rules (33 Code of Federal Regulations section 83.01 et seq.) and the International Regulations for Preventing Collisions at Sea (72 COLREGS), which are implemented through the International Navigational Rules Act of 1977 (33 United States Code sections 1601–1608), and within Navy instructions including, Surface Ship Navigation Department Organization and Regulations Manual (U.S. Department of the Navy, 2021). Further, the Navy is prepared to respond to such rare events with appropriate spill response capability mechanisms available. The Navy maintains salvage and towing response capability through the employment of Navy assets and through worldwide salvage contracts. The Navy would address environmental considerations at that time as necessary consistent to appliable federal laws.

***NMFS CR #7**: Develop a method and process to accurately track the amount and location where MEM is expended in the HSA. This recommendation covers small caliber weapons to missiles. Make an estimate of the accumulation of MEM in areas where training goes on around Kauai, Oahu, and Maui and in the training areas W186 through W196.*

Navy Response to CR#7: The APs do not agree to follow this recommendation. The vast majority of MEM is expended at least 3 NM from land, in deep offshore waters, sinking quickly to the seafloor below the photic zone where conditions are cold (near freezing) and anoxic within surface sediments. Munitions on the seafloor are expected to degrade slowly over decades and be partially or entirely covered by soft unconsolidated sediments. There has been no evidence of accumulation of military items in a manner that has been shown to adversely affect EFH.

***NMFS CR #8**: NMFS recommends that the DON either provide significant fiscal support for marine debris cleanup being executed by a non-profit organization or the state of Hawaii in the HRC or develop and execute a significant debris cleanup project at a DOD installation. The amount of fiscal support or cleanup should be commensurate with the amount of debris being introduced to the marine environment. NMFS is amenable to various approaches and is willing to discuss these options with the DON in more detail.*

Navy Response to CR#8: The APs do not agree to follow this recommendation. The Navy, and other services do not have statutory authority or responsibility for marine debris removal, nor are funds appropriated for that purpose. Accordingly, conducting offshore marine debris removal is inconsistent with our mission and may violate fiscal law. However, while conducting military readiness activities, the Navy and other services implement conservation measures to offset adverse effects to EFH, which includes the retrieval of MEM, to the greatest extent practicable and when safe to do so. For example, during gunnery exercises, expended shells are captured on the deck, expended targets and medium to extra-large parachutes are recovered to the extent recovery is possible, and exercise torpedoes are recovered after each use.

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Additionally, the Navy has several marine debris clean-up projects that are implemented through installations' Integrated Natural Resources Management Plans (INRMPs). The APs will continue to voice support for these marine debris removal efforts. Examples of projects include Navy's annual funding of Joint Base Pearl Harbor Hickam's Marine Debris Reduction project which includes in-water debris removal within the Naval Defense Sea Area, Pacific Missile Range Facility's Marine Debris marine clean-up events, and U.S. Marine Corps Base Hawaii's funding and support for beach trash removal. Projects planned or programmed by the Installations' Natural Resource Managers under their appropriate Sikes Act authorities are subject to the availability of funds properly authorized and appropriated under Federal law. The Navy's recommendation that Installations' Natural Resources Managers continue to prioritize, plan, and program for funding in support of marine debris projects (when Sike Acts authority allows) should not be construed as an unauthorized commitment or a violation of the Anti-Deficiency Act (31 USC 1341 et seq).

NMFS CR #9: *Avoid the use of chaff and/or maximize the distance of training exercises around Penguin Banks to the greatest extent possible from May to September. This shallow bank is a known spawning location of at least one important bottomfish, uku (Aprion virescens) (Nadon et al. 2020; Ayers 2022, Suca et al. 2025), that is a designated MUS in the Hawaii FEP (WPFMC 2009b). Uku spawn on Penguin Banks from May to September. Mortality during the larval phase is high for fish (Houde 1987) and that acts as a major selection pressure during the larval stage (Marshall and Morgan 2011). It is important to avoid potential adverse impacts to the spawning and development of fish larvae of Uku.*

Navy Response to CR#9: The APs do not agree to follow this recommendation. Chaff deployment from military readiness activities occurs in designated Warning Areas around Hawaii, and there are no Warning Areas over or upwind of Penguin Banks (see enclosure). Therefore, the recommendation is not applicable to the proposed action.

We appreciate PIRO's continued support in helping the U.S. Navy meet its environmental responsibilities and mission requirements. If there are any questions on this response my point of contact is Ms. Maria Carnevale, [redacted]

Sincerely,

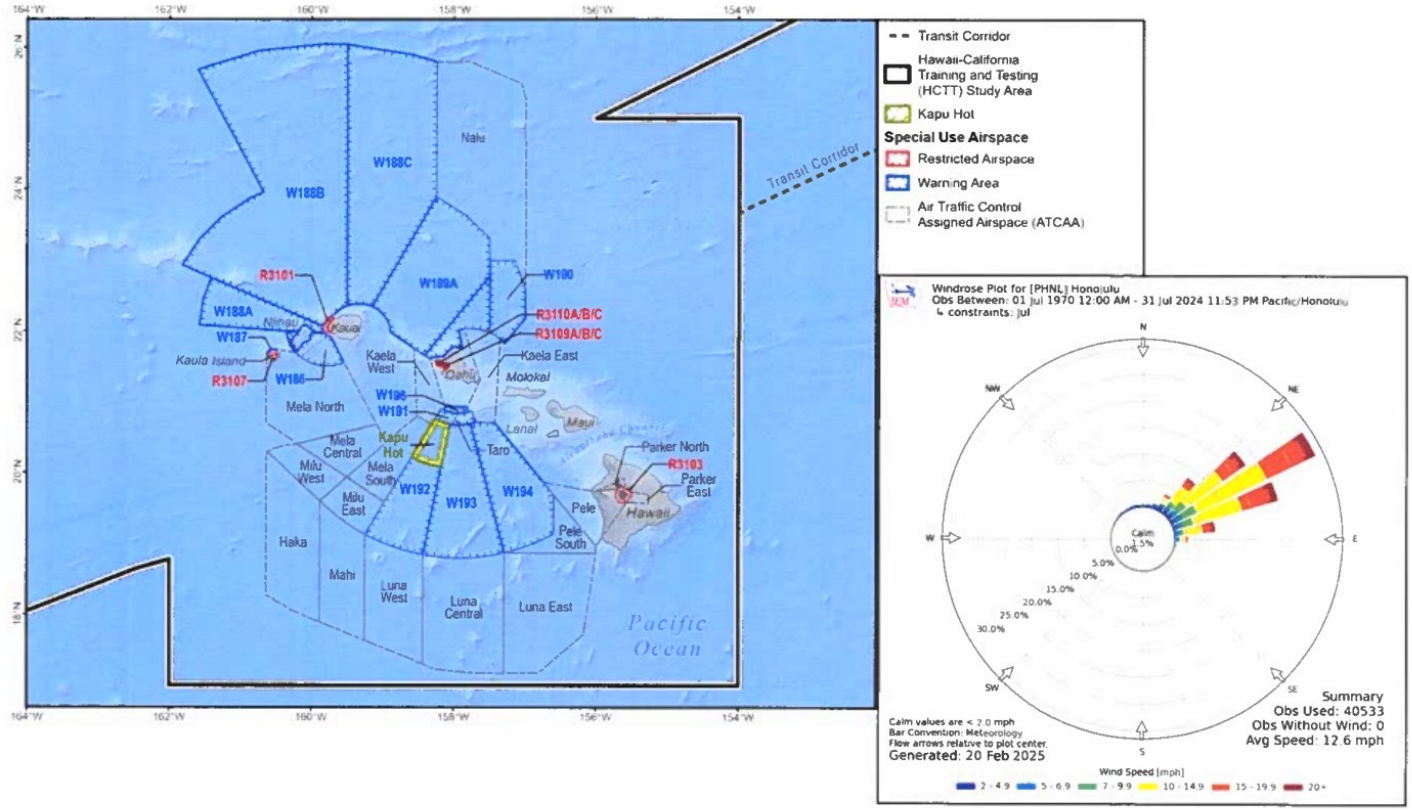
J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: Figure shows no Warning Airspace is upwind of Penguin Banks

6

Enclosure:

Figure shows that no Warning Airspace is upwind of Penguin Banks. A July wind rose is used as an example, but there is no discernable differences in any other month of May through September.



From:	Steven McKagan - NOAA Federal
To:	Carnevale, Maria A CIV USN COMPACFLT N46 (USA)
Cc:	Golden, Dawn K CIV DOC (USA); Dean, Ronnie J CIV (USA); Brindock, Kevin M CIV (USA); Barkman, Alexandria L CIV (USA); Delaney, David G CIV (USA); USN NS Norfolk USFFC Mailbox NEPA-Admin-Records; Stone, Alexander M CIV USN COMPACFLT N46 (USA)
Subject:	Re: [Non-DoD Source] EFH Conservation Recommendations Letter for HCTT in the Hawaii Study Area
Date:	Thursday, July 10, 2025 12:01:18 PM

Hafa Adai Maria,

To expedite the process and capture what we see as an ongoing opportunity to address CR #6 and CR #7, NMFS is providing our 10-Day Letter response as an email here. We look forward to our ongoing partnership with the Navy to both improve our conservation outcomes and the efficiency of our regulatory processes in the Pacific.

On June 26, 2025, the National Marine Fisheries Service, Pacific Islands Regional Office, Protected Resources Division (NMFS) received your letter by direction of the Department of Navy and Action Proponents including the U.S. Marine Corps, U.S. Coast Guard, U.S. Air Force, and U.S. Army (hereafter, Navy) titled 'Navy Reply to Essential Fish Habitat Conservation Recommendations For Hawaii Portion of HCTT (Phase IV). The Navy's letter provides individual responses to each of the Essential Fish Habitat (EFH) conservation recommendations that were provided in response to the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement (EIS)/Overseas EIS (OEIS) EFH consultation.

NMFS would like to thank the Navy for taking a close look at each of the new conservation recommendations (CRs) that we put forward as part of updated HCTT activities and for building in substantive best management practices throughout the proposed activities that will help avoid and minimize impacts to EFH. NMFS appreciates the clarifications regarding the applicability of multiple CR's (i.e., CR #1, CR #2, CR #3) that were put forward to limit the potential spread of aquatic invasive species out of Pearl Harbor through any planned or potential future activities that could bring crawlers or ballast water exchange into or out of the harbor. NMFS agrees that these CRs are not needed if those types of actions are not going to take place within Pearl Harbor. The Navy is also already planning to avoid target drops on hardbottom using a conservative 350 yard buffer throughout the action area, and is not planning the use of any chaff in the vicinity of Penguin Banks, clarifying the lack of applicability of CR #5 and CR #9 respectively. The Navy is also supporting ongoing marine debris initiatives within the Hawaii Integrated Natural Resource Management Plans (INRMPs) on Hawaii that support marine debris management that already help to meet CR #8. Furthermore, NMFS greatly appreciated the Navy's willingness to implement CR #4 and improve the ability of bottom crawlers to avoid sensitive habitats.

NMFS Responses

Given our agreement on the status and approach for 7 of the 9 proposed CRs, we will limit the NMFS responses below to CR #6 and CR #7, where NMFS still sees opportunity to improve coordination and conservation outcomes. Below, and pursuant to the EFH provisions of the Magnuson-Stevens Fishery Conservation and

Management Act (Magnuson-Stevens Act, Section 305(b) as described by 50 CFR 600.920), NMFS evaluates the sufficiency of Navy responses by restating the CRs, Navy responses; and our subsequent response including opportunities for ongoing partnership to meet our shared conservation goals.

NMFS CR #6: Department of Navy (DON) should work with NMFS and local agencies to develop a vessel grounding response plan that includes a funding mechanism and protocols for expedited vessel removal, damage assessment surveys, and strategies to offset any unavoidable loss to EFH resources (e.g., corals, seagrass, etc.). This would also inform and minimize potential cumulative adverse effects from unexpected groundings as HCTT continues into the future.

Navy Response to CR #6: The APs do not agree to follow this recommendation. Vessel grounding is not a reasonably foreseeable action associated with the HCTT proposed action. It has been over 15 years since Navy had a vessel run aground in the Hawaiian waters. Vessels are operated with full consideration of safe navigation, and vessel and crew safety. Navy vessels are required to operate in accordance with applicable navigation rules, such as the Inland Navigation Rules (33 Code of Federal Regulations section 83.01 et seq.) and the International Regulations for Preventing Collisions at Sea (72 COLREGS), which are implemented through the International Navigational Rules Act of 1977 (33 United States Code sections 1601-1608), and within Navy instructions including, Surface Ship Navigation Department Organization and Regulations Manual (U.S. Department of the Navy, 2021). Further, the Navy is prepared to respond to such rare events with appropriate spill response capability mechanisms available. The Navy maintains salvage and towing response capability through the employment of Navy assets and through worldwide salvage contracts. The Navy would address environmental considerations at that time as necessary consistent to applicable federal laws.

NMFS Response: We appreciate the Navy's position, safe navigation practices, and adherence to National and International rules and regulations which greatly reduce the risk of vessel grounding events. Nevertheless, grounding events do happen. While it has been 15 years since a Navy Vessel ran aground in Hawai'i, Navy vessels have run aground as recently as 2017 in Guam, and 2023 outside of US waters. An efficient and effective response typically requires coordination with local and federal government partners, leveraging of locally available resources, quickly navigating regulatory requirements, and potentially initiating impact assessments and mitigation planning. Developing a holistic response plan and identifying key partners and potential funding vehicles can greatly expedite response success, saving both time and money while also reducing environmental impacts. Therefore, we maintain our position in CR #6.

NMFS CR #7: Develop a method and process to accurately track the amount and location where military expended material (MEM) is expended in the Hawaii study area (HSA). This recommendation covers small caliber weapons to missiles. Make an estimate of the accumulation of MEM in areas where training goes on around Kauai, Oahu, and Maui and in the training areas W 186 through W 196.

Navy Response to CR #7: The APs do not agree to follow this recommendation. The vast majority of MEM is expended at least 3 NM from land, in deep offshore waters, sinking quickly to the seafloor below the photic zone where conditions are cold (near freezing) and anoxic within surface sediments. Munitions on the seafloor are expected to degrade slowly over decades and be partially or entirely covered by soft unconsolidated sediments. There has been no evidence of accumulation of military items in a manner that has been shown to adversely affect EFH.

NMFS Response: NMFS understands the Navy's position, and appreciates that the MEM will mostly fall to the deep ocean seafloor. We are still concerned about the overall size of the MEM footprint and the potential impacts even a fraction of the MEM could have when released over coral reefs and sensitive deep water habitats. Therefore, we maintain our position in CR #7 if the distribution of those items is not better characterized and monitored at longer time scales.

Conclusion

NMFS maintains our stated positions on CR #6 and CR #7 and believes that we can meet the intent of all our other conservation recommendations through the clarifications provided by the Navy and through ongoing coordination. We appreciate the opportunity to provide comments on the Navy's response to our EFH conservation recommendations for this proposed project. We are committed to providing continued cooperation and subject matter technical expertise as identified in the conservation recommendations, and as requested, to the Navy in order to achieve the project goals and sufficiently comply with the EFH provisions of the Magnuson-Stevens Act. Please do not hesitate to contact me with any comments, questions or to request further technical assistance.

Sincerely,

-Steve

J.6 Marine Mammal Protection Act

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0612
September 16, 2024

Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
SSMC3, Room 13821
Silver Spring, MD 20910-3282

Dear Sir or Madam:

SUBJECT: NAVY SUBMISSION OF LETTER OF AUTHORIZATION REQUEST FOR THE HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

Pursuant to the Marine Mammal Protection Act, the U.S. Navy is formally submitting to the Office of Protected Resources (OPR) of the National Marine Fisheries Service the Navy's Letter of Authorization (LOA) request. The draft Hawaii-California Training and Testing (HCTT) Environmental Impact Statement/Overseas Environmental Impact Statement supports this LOA application.

The HCTT LOA application will be forwarded to the appropriate staff electronically based on previous OPR requests for digital submission only.

We appreciate your continued support in helping the U.S. Navy meet its environmental responsibilities. If there are any questions on this request, my point of contact is Mr. Chip Johnson. He may be reached via email at [redacted] or via phone at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: HCTT LOA Application

J.7 National Historic Preservation Act

J.7.1 California

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0321
May 10, 2024

Ms. Julianne Polanco
State Historic Preservation Officer
California Department of Parks and Recreation
1725 23rd Avenue, Suite 100
Sacramento, CA 95816

Dear Ms. Polanco:

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION FOR THE HAWAII-CALIFORNIA TRAINING AND TESTING ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT STUDY AREA

In accordance with its responsibilities to manage cultural resources, the United States (U.S) Navy (Navy) is reinitiating consultation with your office regarding activities associated with Hawaii-Southern California Training and Testing (HSTT) Study Area which, through previous consultation that occurred in 2012 and 2017, was determined to be an undertaking as defined in 36 Code Federal Regulations (CFR) 800.16(y). Due to a change in the area of potential effect (APE), the HSTT is now referred to as the Hawaii-California Training and Testing (HCTT) Study Area. The currently proposed undertaking represents Phase IV of the HCTT (formerly HSTT).

For the proposed undertaking, the Navy (including the U.S. Marine Corps), in cooperation with the U.S. Coast Guard, U.S. Army, and U.S. Air Force, will conduct at-sea military readiness activities in the HCTT Study Area. In accordance with 36 CFR 800.2(a)(2), the Navy will serve as the lead federal agency. In letters dated June 5, 2012, and October 20, 2017 (reference USN120509B), your office previously concurred with the Navy's finding of No Historic Properties Affected for this undertaking. However, a change in the undertaking's APE associated with the California Study Area necessitates further consultation with your office. Consistent with 36 CFR 800, the regulations for implementing Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108 [NHPA]), the Navy is providing: a description of the proposed undertaking, the APE, the identification of historic properties, a summary of consultation history, and the Navy's plan for consultation.

The Navy sent your office a Notice of Intent (NOI) letter to prepare the HCTT Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), dated December 7, 2023, wherein the Navy invites comments on the scope of the EIS/OEIS including identification of potential alternatives and environmental concerns, information and analyses relevant to the Proposed Action, issues that should be addressed in the National Environmental

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May 10, 2024

Policy Act (NEPA) analysis, and the potential to affect historic properties pursuant to Section 106 of the NHPA. This EIS/OEIS will consolidate previously analyzed actions into one comprehensive environmental document. Additionally, the NOI letter informed your office that the Navy is coordinating Section 106 compliance and NEPA requirements, consistent with 36 CFR 800.8 by consulting with interested parties regarding potential effects to historic properties that may result from the proposed training and testing activities concurrent with the NEPA public involvement process.

DESCRIPTION OF THE UNDERTAKING

The subject undertaking is to continue military readiness activities within the Navy's existing at-sea Pacific Ocean training ranges, with some proposed increases in the number of training and testing activities. Military readiness activities consist of testing and training that may include the use of active sonar and other acoustic sources, the use of explosives, and modernization and sustainment of training ranges necessary to support military readiness. Enclosure 1 provides tables listing specific activities proposed and their descriptions.

The proposed undertaking includes at-sea training and testing activities previously analyzed in the 2013 HSTT EIS/OEIS, the 2018 HSTT EIS/OEIS, the 2022 Point Mugu Sea Range (PMSR) EIS/OEIS, and activities associated with other EIS or Environmental Assessments (EAs) previously completed for both ranges.

AREAS OF POTENTIAL EFFECTS

Consistent with 36 CFR 800.16(d), the APE for this project is defined as the geographic area within which the proposed undertaking may cause effects to historic properties. The HCTT Study Area consists of the Hawaii Study Area, the California Study Area, and the transit corridor connecting the two, as shown in enclosure 2 and 3.

The APE for this consultation is limited to the at-sea portions of the California Study Area shown in enclosure 3. The California Study Area includes four existing training and testing range complexes: The Southern California (SOCAL) Range Complex, the PMSR, the Northern California (NOCAL) Range Complex, and the Silver Strand Training Complex (SSTC). In addition to these four existing areas, the California Study Area includes new airspace: Warning Area 293 (W-293) and W-294. Amphibious Approach Lanes link the offshore ocean areas of central and northern California to the shore in four locations indicated in enclosure 3. Combined, the California Study Area is 172,000 square nautical miles of sea and airspace used for training and testing activities. The California Study Area is located off the coast of San Diego, Orange, Los Angeles, Ventura, Santa Barbara, San Luis Obispo, Monterey, Santa Cruz, Sonoma, and Mendocino counties, as depicted in enclosure 3.

The APE consists primarily of the at-sea components of the range complexes. It also includes Navy pierside locations and port transit channels, bays, harbors, inshore waterways, and civilian ports where training and testing activities occur, as well as transits between homeports and operating areas. While the majority of the proposed activities will occur in or over water,

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regarding historic properties which may be of religious and cultural significance to them, pursuant to 36 CFR 800.4(a)(4).

Within the California Study Area, most activities will take place within the at-sea ranges. Therefore, submerged shipwrecks and planes comprise all of the documented cultural resources. To date, there has been no systematic underwater survey of submerged resources within the California Study Area, and record of precise locations of wrecks is rare. Available information is largely limited to vague descriptive narratives of the areas in which ships or planes were last known, thought to have sunk, or crashed. Based on the information present in available studies, there are 300+ cultural resources located within the California Study Area, including but not limited to, aircraft, pleasure craft, sport and commercial fishers, and cargo and military vessels.

Known Submerged Resources:

a. SOCAL Range Complex. A cultural resources review completed in 2005 for the San Diego Deepening at Tenth Avenue Marine Terminal project identified three known cultural features: a shipwreck (the Della), an 1887 marine utility cable, and a sunken Ford Model T. An additional 24 cultural resources were identified with no locational data which are known to have been lost in the San Diego area. These include schooners, barges, clippers, gas and oil screws, a submarine, a yacht, a bark, a ferry, a ship, and a steamer.

b. PMSR

(1) There are 195 shipwrecks located within or near the PMSR, with 129 having plottable coordinates. The largest number of shipwrecks found within the PMSR is near Santa Rosa Island. These shipwrecks occurred in the vicinity of Talcott Shoal, Sandy Point, Bee Rock, East Point, and Becher's Bay. Thirty-two ships are known to have wrecked within 2 miles of SNI. In many cases, although a shipwreck is known to have occurred and its general coordinates are known, no wreckage has been located.

(2) Military watercraft and aircraft lost within or near the PMSR include 31 shipwrecks and 92 downed aircraft. Of the 31 shipwrecks, seven were involved in the 1923 "Honda Point disaster," the largest peacetime U.S. Navy accident which resulted in the loss of seven destroyers after they ran aground in dense fog on September 8, 1923. Another 22 ships were used as targets as part of fleet reductions. The remaining two military shipwrecks within or near the PMSR occurred prior to 1920 and there is little record of their sinking. The 92 identified aircraft losses all occurred before 1951, with 87 of the losses occurring during the 1942-1945 period. None of the losses has precise locational data, and it is unclear whether the aircraft were salvaged.

c. SSTC

(1) Three shipwrecks are located in or near the training beach on the bayside of the Silver Strand peninsula. Unnamed wrecks are recorded in shallow water at the northern end of

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May 10, 2024

Delta South beach, in the middle of San Diego Bay, and at the mouth of Fiddlers Cove. The age and significance of these wrecks are not known.

(2) Three shipwrecks are located near training areas on the oceanside of the Silver Strand peninsula: the bark Narwhale (sank in 1934); the submarine S-142; and the Subchaser YC689 (sank in 1943). Additionally, the destroyer USS Hogan (DD178), a military aircraft (S2F Tracker), and a sunken sailboat are located further offshore, south of SSTC and west of the city of Imperial Beach.

d. At-sea areas up to the coastline along Southern California from approximately Dana Point to San Luis Obispo.

(1) The oil tanker Montebello was torpedoed and sunk by a Japanese submarine on December 23, 1941, 7 miles off the coast of Cambria, CA.

(2) The U.S. Coast Guard Cutter McCulloch, which contributed to American victory at the Battle of Manila Bay, sank 4.5 miles off Point Conception, CA after colliding with a passenger ship on June 13, 1917. The location of the wreckage went unknown for nearly 100 years, until its discovery during a National Oceanic and Atmospheric Administration and U.S. Coast Guard training mission in 2016.

SUMMARY OF CONSULTATION HISTORY

Prior to the preparation of the draft HCTT EIS/OEIS, the Navy conducted previous evaluations of at-sea activities to include consultations with the California State Historic Preservation Officer (CA SHPO), under Section 106, for the same or similar activities in the Navy's proposed undertaking in the 2013 HSTT EIS/OEIS, the 2018 HSTT EIS/OEIS, and the 2022 PMSR EIS/OEIS.

Electronic copies of consultation letters between the Navy and your office regarding these undertakings are attached (enclosure 4). In addition to consultations for the above referenced EIS/OEIS, the Navy has also previously consulted with your office on a number of smaller scale undertakings included in the larger military readiness activities analyzed by the HCTT EIS/OEIS.

In consultation with the CA SHPO for the development and use of the SLAM site on SNI in 1998, the SHPO concurred with the Navy's findings of the likelihood of an adverse effect to historic properties within the APE. In consultation with the SHPO, the Navy conducted a data recovery program to mitigate the potential effects to one historic property within the undertaking's APE.

In January of 2002, the Navy submitted a letter to the CA SHPO seeking concurrence with a determination that the proposed activities addressed in the PMSR EIS would have no effect on National Register listed or eligible properties. The CA SHPO did not provide a response to the Navy's request.

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no adverse effect to submerged National Register listed or eligible properties. The CA SHPO concurred with the Navy's findings in October 2017.

In 2022, the Navy consulted with the CA SHPO for the PMSR EIS/OEIS and determined that there would be no adverse effects to the submerged National Register listed or eligible properties. The CA SHPO did not concur and recommended a Programmatic Agreement approach. The Pechanga Band of Indians also objected and requested that the Advisory Council on Historic Preservation (ACHP) review the Navy's finding of no adverse effect determination. In September of 2021, the ACHP found no basis to disagree with the Navy's finding.

PLAN FOR CONSULTATION

Pursuant to 36 CFR 800.8(a)(1), the Navy plans to hold Section 106 meetings in conjunction with the NEPA public meetings for the Draft HCTT EIS/OEIS. Comments received regarding historic properties in the APE during the NEPA and Section 106 process will be considered under Section 106.

In accordance with 36 CFR 800.3(f), the Navy has made efforts to identify consulting parties through: public notification within the Federal Register and five local and regional California newspapers of the Navy's notice of intent to prepare an EIS/OEIS; a news release by the Navy Region Southwest Public Affairs Officer (PAO); social media posts by the Commander, Navy Region Southwest PAO; emails to website subscribers from the 2018 HSTT EIS/OEIS and 2022 PMSR EIS/OEIS; a project website; a virtual open house presentation; and briefings. The Navy also requested a Sacred Lands File (SLF) search from the Native American Heritage Commission to identify tribes, organizations, or individuals that might attach religious or cultural significance to cultural resources within the proposed APE.

On December 14, 2023, the Navy sent a NOI letter to federally recognized tribes and non-federally recognized tribes, organizations, and individuals identified in the SLF (see enclosure 5) notifying them of the intent to prepare an EIS/OEIS. To date, the Navy has received two responses to the NOI letter. The Rincon Band of Luiseño Indians notified the Navy of their desire to in engage in Section 106 consultation for the proposed undertaking. Conversely, the Santa Ynez Band of Chumash Indians requested no further consultation on the undertaking unless new information is revealed or there is a change in scope of work.

The Navy recognizes the unique knowledge and perspectives tribes possess regarding the cultural landscape and resources within the APE. Accordingly, on May 16, 2024, the Navy sent federally recognized tribes which were identified in the SLF search a letter inviting them to enter into Government-to-Government consultation with the Navy for this Undertaking. The Santa Ynez Chumash were not sent this letter, per their request.

The Navy intends to continue sending updates to both federally recognized and non-federally recognized tribes, and other consulting parties, and provide opportunities for consultation on the HCTT EIS/OEIS if requested.

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Ser N46/0321
May 10, 2024

If you have questions or concerns, or require further information please contact Mr. Richard Bark, Region Archaeologist, Naval Facilities Engineering Systems Command Southwest, at [redacted] or [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosures: 1. Table of Proposed Activity Descriptions
2. HCTT EIS/OEIS Study Area
3. HCTT EIS/OEIS California Study Area
4. Previous Section 106 Consultation
5. Notice of Intent Letter Recipients

8

106 Determination of Effect for the HCTT Military Readiness Activities in California Study Area

1 message

From: Bark, Richard G (Rich) CIV USN NAVFAC SW SAN CA (USA)
Sent: Friday, May 30, 2025 2:30 PM
To: OHP, CALSHPO@Parks
Cc: Tozer, Tristan@Parks; Megliola, Lori K CIV USN NAVFAC SW SAN CA (USA); Porter-Rodriguez, Jessica A CIV USN NAVFAC SW SAN CA (USA); USN NS Norfolk USFFC Mailbox NEPA-Admin-Records; USN NS Norfolk USFFC Mailbox NEPA-Admin-Records
Subject: RE: 106 Determination of Effect for the HCTT Military Readiness Activities in California Study Area

SHPO Polanco,

This email continues consultation on the subject undertaking with your office in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act of 1966, as amended. The purpose of this email is to notify your Office that the Navy considers its section 106 responsibilities for this undertaking complete with a documented finding of No Historic Properties Affected.

Consistent with 36 CFR 800.3, the Navy initiated consultation on the subject undertaking in a letter sent May 16, 2024. Following consultation with federally recognized tribes, and consistent with 36 CFR 800.4(d)(1), in a letter sent March 28, 2025 the Navy provided your office with documentation of its finding that there are not historic properties present. Consistent with 36 CFR 800.4(d)(1)(i), if the SHPO does not object within 30 days of receiving the Navy's documented finding, the agency official's responsibilities under Section 106 are fulfilled. As more than 30 days has passed and the Navy has not received an objection from your office, the Navy now considers its Section 106 responsibilities complete for the subject undertaking.

##HCTT Phase IV EIS No Privilege##

V/r,
Richard G. Bark
Region Archaeologist
NAVFAC SW
750 Pacific Highway
ATTN: EV23/Floor #12
San Diego, CA 92132
[redacted]

J.7.2 Hawaii

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0605
September 16, 2024

Ms. Dawn Chang
State Historic Preservation Officer
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
Kapolei, HI 96707

Dear Ms. Chang:

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 CONSULTATION FOR THE PROPOSED HAWAII-CALIFORNIA TRAINING AND TESTING

In accordance with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108) and the responsibilities with 36 Code of Federal Regulations (C.F.R.) § 800.3(a), the Department of the Navy (DON) is initiating consultation with your office regarding the proposed Hawaii-California Training and Testing (HCTT) military readiness activities. The proposed undertaking represents Phase IV of the HCTT (previously referred to as Hawaii-Southern California Training and Testing [HSTT]).

For the proposed undertaking, the DON (including the U.S. Marine Corps), in cooperation with the U.S. Coast Guard, U.S. Army, and U.S. Air Force, would continue to conduct at-sea military readiness activities within the HCTT Study Area. However, in accordance with 36 C.F.R. § 800.2(a)(2), the DON will serve as the agency official. The enclosure provides a description of the undertaking; the area of potential effects (APE); existing data on identified historic properties; and the approach to seek additional relevant information.

On December 7, 2023, pursuant to the National Environmental Policy Act (NEPA), the DON sent a letter with its Notice of Intent (NOI) to prepare the HCTT Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to over 600 organizations and individuals to include government agencies (including your office), Native Hawaiian Organizations (NHOs), Interested Parties and the public. The DON invited comments on the scope of the EIS/OEIS proposed action to include the potential to affect historic properties pursuant to Section 106 of the National Historic Preservation Act (NHPA).

Additionally, the NOI letter informed your office that the DON is coordinating Section 106 process with NEPA requirements, consistent with 36 C.F.R. § 800.8. This will be accomplished by consulting with interested parties and the public regarding potential effects to historic properties that may result from the proposed training and testing activities concurrent with the NEPA public involvement process.

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September 16, 2024

As the APE is unchanged from the 2018 HSTT consultation effort, the information on historic properties is already acquired, and past consultations with SHPD and NHOs have occurred on a similar undertaking, the finding of effect can be provided shortly.

At this time, the DON requests your input on the plan to involve the public in the Section 106 process per 36 C.F.R. § 800.3(e), the proposed APE, and the identification of historic properties as required by 36 CFR § 800.4. If you have questions or concerns, or require further information, please contact Dr. Paul Shawn Marceaux, Naval Facilities Engineering Systems Command Pacific, via phone at [redacted] or via email at [redacted].

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: HCTT Section 106 Supplemental Information August 2024

2

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0281
April 16, 2025

Jessica Puff
Administrator, State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
Kapolei, HI 96707

Dear Ms. Puff:

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 CONSULTATION FOR THE PROPOSED HAWAII-CALIFORNIA TRAINING AND TESTING (HICRIS #2024PR01118)

The Department of the Navy (DON) is continuing consultation in compliance with Section 106 of the National Historic Preservation Act of 1966 (54 USC 306108) in support of the proposed Hawaii-California Training and Testing (HCTT) military readiness activities. Although the present undertaking includes the Hawai'i Study Area and the California Study Area, this Section 106 consultation is limited to activities within the Hawai'i State Historic Preservation Division's (SHPD) jurisdiction as defined in the area of potential effects (APE).

The DON sent a letter to your office to initiate consultation on September 16, 2024 (Ser N46/0605). At that time, the DON established the undertaking and requested input on the proposed APE and the identification of historic properties in accordance with 36 CFR § 800.4. The DON also requested input on the DON's plan to involve the public pursuant to 36 CFR § 800.3(a)(e). Additionally, in coordination with the National Environmental Policy Act (NEPA) process, the DON offered information on participating in the Section 106 process and requested comments on the project's potential to affect historic properties from over 600 organizations and individuals to include government agencies, Native Hawaiian Organizations (NHOs), interested parties, and the public.

This letter provides an update on efforts to gather additional relevant information from consulting parties and the public as well as the DON's proposed finding of effect. Enclosure 1 includes supplemental information to fulfill the documentation requirements of 36 CFR § 800.11(d).

FINDING OF EFFECT

Training and testing activities summarized in enclosure 1 are consistent with previous activities discussed in 2018 which have been conducted with no cultural resources being affected in previous years. Training and testing using artillery and explosives would take place within the open ocean or near-shore areas within designated training ranges and areas away from where there are any known historic properties. While historic properties do exist within the APE, such as Pearl Harbor National

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April 16, 2025

Historic Landmark, the proposed activities will not affect the characteristics that make these historic properties eligible as defined in 36 CFR § 800.16(i). The remaining types of training and testing activities within the APE are not the type of activities that affect historic properties and thus the historic properties along the shore such as Hawaiian fishponds would not be affected. In the remote chance that historic properties are discovered or unanticipated effects on historic properties found after the DON has completed the Section 106 process, the DON would make reasonable efforts to avoid, minimize, or mitigate adverse effects per 36 CFR § 800.13(b) and follow 36 CFR § 800.13(b)(3) as applicable.

In 2018, after discussion on most of these same activities, the SHPD concurred with the DON's finding of "no historic properties affected" on the Hawaii-Southern California Training and Testing (HSTT) undertaking and requested an annual one-page memorandum summarizing amphibious landing activity and reporting instances of inadvertent discoveries of historic properties, if any (enclosure 2). In compliance with the request, the DON has provided annual summaries. To date, there have been no instances of inadvertent discoveries. The current HCTT undertaking is nearly the same as what was analyzed in the 2018 HSTT undertaking with the exception of a limited number of new activities. The current HCTT APE is the same as it was under HSTT. Analysis of the various activities is provided in enclosure 1. Pursuant to 36 CFR § 800.4(b)(1), the DON made a reasonable and good faith effort to carry out identification efforts which included taking into account past planning, research and studies, the magnitude and nature of the undertaking and the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties.

Based on the information obtained which is included herein, the DON has determined that the proposed HCTT undertaking would result in a finding of no historic properties affected in accordance with 36 CFR § 800.4(d)(1). The DON requests your concurrence within 30 days of receipt of this letter. If no objection is received from your office, the DON will assume concurrence with this finding. The DON is forwarding copies of this letter to notify consulting parties as part of the Section 106 process and will deem the DON's responsibilities under Section 106 fulfilled. If you have questions or concerns, please contact Dr. Paul Shawn Marceaux, Naval Facilities Engineering Systems Command Pacific, at [redacted] or [redacted]

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
By direction

Enclosures: 1. HCTT NHPA Section 106 Supplemental Information, April 2025
2. Hawaii SHPD's Concurrence Letter for HSTT, December 2018

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ENCLOSURE 1: Hawaii-California Training and Testing Section 106 Supplemental Information

PROJECT DESCRIPTION

Under the proposed Hawaii-California Training and Testing military readiness activities (HCTT) undertaking, the DON (including the U.S. Marine Corps), in cooperation with the U.S. Coast Guard, U.S. Army, and U.S. Air Force, would continue to conduct at-sea military readiness activities within the APE. Activities would be limited to at-sea training and testing and would not encompass terrestrial activities or involve ground disturbance outside of submerged lands. The proposed undertaking represents Phase IV of the review of military readiness activities conducted at sea. Phase III was previously referred to as Hawaii-Southern California Training and Testing (HSTT), for which your office concurred with the DON's finding of "no historic properties affected" in a letter dated December 11, 2018 (Enclosure 2). The HCTT proposed undertaking is comprised of training and testing activities previously analyzed in the HSTT undertaking with the exception of a limited number of new activities. While some training and testing activities would increase in frequency, these are consistent with current training and testing activities currently occurring within the APE and have been for decades. The DON's initial HCTT consultation letter dated September 16, 2024, contained a comprehensive description of the undertaking, including an extensive list of proposed activities.

Pursuant to 36 CFR § 800.4(a)(1), the DON established an APE to identify historic properties in the study area. The DON coordinated the APE in the initial consultation letter to your office, and the APE is unchanged from the 2018 HSTT consultation process. The APE extends 12 nautical miles (nm) seaward from the high tide line along the shoreline, which is the limit of U.S. territorial waters. For Section 106 consultation purposes, the high tide line refers to the mean high tide, as defined by the U.S. Coast and Geodetic Survey as, "any place that is the average height of all the high waters at that place over a considerable period of time," that has been interpreted as a period of 18.6 years. Notwithstanding this definition, most of the undertaking's activities would occur far seaward of this boundary.

IDENTIFICATION OF HISTORIC PROPERTIES

In accordance with 36 CFR § 800.2(c)(d), the DON consulted with Native Hawaiian Organizations (NHOs), other parties with a demonstrated interest in the undertaking, and the public. In December 2023, the DON sent a Notice of Intent (NOI) letter to over 600 individuals and organizations, including State of Hawaii Government Agencies, NHOs, Non-Government Organizations, elected officials, community and business groups, universities, and the public. The NOI requested comments on the project's potential to affect historic properties and offered information on participating in the Section 106 process. The NOI distribution included representation across the main Hawaiian Islands.

Consistent with 36 CFR § 800.3(f) the DON made efforts to identify NHOs that might attach religious and cultural significance to historic properties in the APE. In September 2024, the DON sent information and invitations to participate as a consulting party to NHOs and interested parties (Table 1), including the previous 2018 HSTT consulting parties. The letter provided a comprehensive description of the undertaking, extent of the APE, existing data on identified historic properties, and the planned approach to seek out additional relevant information. The DON also sent this information to the Office of Hawaiian Affairs (OHA) and

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the Advisory Council on Historic Preservation. The DON received two requests from NHOs to participate as a consulting party. Ms. Laulani Teale made a request to participate on behalf of the Hoʻopae Pono Peace Project. Mr. Matthew Kahoʻopiʻi, a Native Hawaiian practitioner, also requested to participate as a consulting party. The DON considered all comments from consulting parties and the public in writing, and at in-person meetings. The DON also held an online virtual information briefing to the public.

Table 1: List of Native Hawaiian Organizations and Interested Parties.

Organization/Association	**Contacts**
ʻĀina Momona	Walter Ritte
Advisory Council on Historic Preservation	
Aloha in Action	Maydean Iao; Leiʻohu Ryder
Historic Hawaii Foundation	Kiersten Faulkner
Hoʻopae Pono Peace Project	Laulani Teale
Kai Palaoa and Mauna Kea Anaina Hou	Kealoha Pisciotta
Kanaka, Kiaʻi Kanaloa	Peleke Flores
Kaunalewa	J. Kaeo Bradford
Kiipuna, Keawe Family, Moku o Keawe	Able Simeomalui
Kingdom of Hawaii (Maui)	Dennis Ragsdale; Marlene Robinson
Konohiki of Hawaii (Kauai)	Sy Shim
Kula Aha Moku	Vernon Kalanikau
Kuloloiʻa Lineage – I ke Kai ʻo Kuloloiʻa	Leināʻala Kuloloio Vedder
Maritime Heritage Coordinator, NOAA	Hans Van Tilburg
Mauna Kea Anaina Hou	Cindy Freitas
Na Kupuna Moku O Keawe	Hanalei Fergerstrom
Native Hawaiian	Liko Martin
Native Hawaiian	Bertha Fowler
Native Hawaiian Practitioner	Matthew Kahoʻopiʻi
Native Tenant Protection Council, Mahi-hani	Shelley Stephens
National Park Service, Preservation Partnerships	Doug Wilson
Office of Hawaiian Affairs	Stacy Ferreira
Poʻo, Nanaʻi Kaula (Lanaʻi), Aha Moku Advisory Committee, and Hauʻouiwi Homestead Association on Lanaʻi	Winifred Basques
Port Allen Fishing Club	
Protect Kahoolawe ʻOhana	Shaylisse Gregory; Kehau Lucas; Davianna McGregor
The Hawaiian Patriotic League	Isaac Harp
UH Disaster Preparedness, NCAR, Indigenous Rising Voices	Matthew Souza

In December 2024, more than 200 NHOs were notified of the availability of the Draft HCTT Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) along with the schedule of in-person and virtual public meetings. The Draft HCTT EIS/OEIS underwent public review from December 13, 2024, through February 11, 2025. Public meetings were held on Oʻahu (Jan. 15, 2025), Kauaʻi (Jan. 16), and in a virtual informational meeting (Jan.

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22) to seek information from potential consulting parties and NHOs as well as receive input identifying historic properties in the HCTT Study Area beyond those identified during the 2018 Section 106 consultations. The DON also met with the Port Allen Fishing Club in Kaua'i on February 05, 2025, to discuss proposed project information with local fisherman and the boating community.

In accordance with 36 CFR § 800.4, the DON sought out information from NHOs, consulting parties, and other individuals and organizations likely to have knowledge of or concerns with historic properties within the APE. The DON reviewed existing information on historic properties within the APE, including any data concerning possible historic properties not yet identified. In addition to seeking new input from NHOs and other sources, the DON considered previously completed consultations. In particular, the 2018 HSTT Section 106 consultation included a comprehensive background review of various resources such as archaeological reports, ethnographic studies, SHPD library and files, marine historic property surveys, and other relevant documents.

The DON received input from NHOs and the public that emphasized the cultural importance of the ocean and the cultural practices voyaging and fishing, and the sacredness of the ocean and marine life, which may be considered *'aumākua*. Although the ocean and cultural practices are not properties considered under Section 106, they are cultural resources and are considered in a separate NEPA analysis (Hawaii-California Training and Testing Draft Environmental Impact Statement/Overseas Environmental Impact Statement, 2024).

The OHA and Department of Hawaiian Home Lands (DHHL) provided comments that also spoke to the cultural importance of Papahānaumokuākea Marine National Monument (PMNM) and associated cultural practices. They suggested the monument should be evaluated as a possible historic property and Traditional Cultural Place (TCP). The DON acknowledges the cultural importance of PMNM but is not proposing new activity within the monument that has potential to affect historic properties. Vessel and aircraft usage is limited in the PMNM, particularly in the Temporary Operating Area (TOA) portion, although it would be conducted in a manner consistent with designation proclamations (Figure 1). There have been no incidents to date of DON activities affecting the PMNM. Should there be, the DON would coordinate with Secretaries of Commerce and Interior to respond, provide mitigation or restoration of the effects of any injury to the PMNM. The proposed activities would be generally limited to vessels conducting training while transiting through the southeastern portion of the monument boundary on route to and from the Western Pacific in an area of open water. This proposed activity would not have the potential to affect a historic property. Therefore, in accordance with 36 CFR § 800.4(b)(4)(1) the DON finds the magnitude and nature of the undertaking and the nature and extent of potential effects on historic properties within the PMNM would not warrant additional survey.

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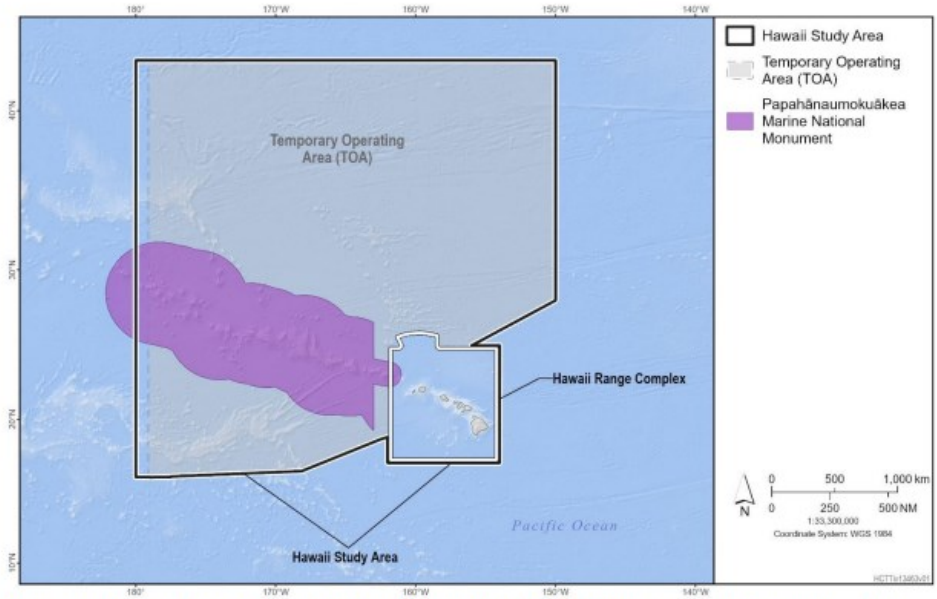


Figure 1: Hawaii Study Area, including Hawaii Range Complex, Temporary Operating Area, and Papahānaumokuākea Marine National Monument.

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Table 2: Navy and Marine Corps Proposed Training Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Major Training Exercises – Large Integrated Anti-Submarine Warfare*			
Composite Training Unit Exercise – Strike Group	The Composite Training Unit Exercise is an integration phase, at-sea, major training exercise, designed to forge the aircraft carrier strike group into a cohesive fighting team before deployment. Composite Training Unit Exercise normally consists of four-week, schedule of event-driven scenarios. An exercise typically consists of seven surface ships, multiple fixed-wing and rotary-wing aircraft, up to two submarines, and various unmanned vehicles. The exercise integrates the aircraft carrier and carrier air wing with surface and submarine units to achieve certification prior to deployment.	Hawaii Range Complex (HRC)	Potential effects to historic properties detailed below in individual training activities.
Rim of the Pacific Exercise	A biennial multinational training exercise in which navies from Pacific Rim nations and other allies assemble in Pearl Harbor, Hawaii, to conduct training throughout the Hawaiian Islands in a number of warfare areas.	HRC	Potential effects to historic properties detailed below.
Major Training Exercises – Medium Integrated Anti-Submarine Warfare*			
Task Force/Sustainment Exercise	Aircraft carrier and its associated aircraft integrates with surface and submarine units in a challenging multi-threat operational environment in order to maintain their ability to deploy. Task Force Exercises and Sustainment Exercises are similar to Composite Training Unit Exercises but are shorter in duration.	HRC	Potential effects to historic properties detailed below.
Integrated/Coordinated Anti-Submarine Warfare*			
Medium Coordinated Anti-Submarine Warfare	Typically, a 3 to 10-day exercise with multiple ships, ASW aircraft, and submarines integrating the use of their sensors, including sonobuoys and unmanned systems, to search, detect, and track threat submarines; event may include inert torpedo firings.	HRC	Potential effects to historic properties detailed below.
Small Joint Coordinated Anti-Submarine Warfare	Typically, a 2 to 5-day exercise with multiple ships, ASW aircraft and submarines integrating the use of their sensors, including sonobuoys, to search, detect, and track threat submarines.	HRC	Potential effects to historic properties detailed below.
Integrated/Coordinated Training – Other*			
Composite Training Unit Exercise (Amphibious Ready Group/Marine Expeditionary Unit)	The amphibious ready group and the Marine expeditionary unit integrate with surface and submarine units in a challenging multi-threat operational environment that certifies them ready to deploy. The exercise normally consists of a four-week schedule of event-driven scenarios.	HRC	Potential effects to historic properties detailed below.
Large Amphibious Exercise	The Large Amphibious Exercise utilizes all elements of the Marine Air Ground Task Force (Amphibious) to secure the battlespace (air and sea), maneuver to and seize the objective, and conduct self-sustaining operations with logistic support of the Expeditionary Strike Group. This exercise could include manned and unmanned activities in multiple warfare areas to secure the battlespace (air and sea) and maneuver.	HRC	Potential effects to historic properties detailed below.
Innovation and Demonstration Exercise	These exercises are conducted to demonstrate or test new capabilities, tactics, techniques, and procedures; and generate standardized, actionable data for evaluation.	HRC	Potential effects to historic properties detailed below.
Multi-Warfare Exercise	Live training events which could involve U.S., Joint, partner nations and allied forces operating across all warfare areas (e.g., amphibious, electronic and cyber, air, surface, sub-surface, special warfare, and	HRC	Potential effects to historic properties detailed below.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
	expeditionary) with manned and unmanned platforms. Events could be comprised of small units up to and including Carrier and Amphibious Strike Groups. Live-fire events could be air-to-surface, ship-to-shore, shore-to-offshore target, and ship-to-ship utilizing live ordnance and laser systems.		
Integrated Air Missile Defense Exercise	Missiles are launched from a ship against a dynamic test target, simulating an airborne threat to ships. These events could be U.S.-led with joint and Coalition forces.	Hawaii Study Area	Potential effects to historic properties detailed below.
*Major Training Exercises and Integrated/Coordinated Training Exercises are comprised of individual training activities listed in tables below.			
Air Warfare			
Air Combat Maneuver	Fixed-wing aircrews aggressively maneuver against threat aircraft to gain tactical advantage.	HRC	Training beyond 12 nm; no historic properties.
Air Defense Exercise	Aircrew and ship crews conduct defensive measures against threat aircraft or simulated missiles.	HRC	Training beyond 12 nm; no historic properties.
Gunnery Exercise Air-to-Air Medium-caliber	Fixed-wing aircraft fire medium-caliber guns at air targets.	HRC	Training beyond 12 nm; no historic properties.
Gunnery Exercise Air-to-Air Small-Caliber	Helicopter aircrews fire small-caliber guns at threat air targets.	HRC	Training beyond 12 nm; no historic properties.
Gunnery Exercise Surface-to-Air Large-caliber	Surface ship crews fire large-caliber guns at air targets.	HRC	Training beyond 12 nm; no historic properties.
Gunnery Exercise Surface-to-Air Medium-caliber	Surface ship crews fire medium-caliber guns at air targets.	HRC	Training beyond 12 nm; no historic properties.
High-Energy Laser Exercise Surface-to-Air	Surface ship crews disable or destroy air targets with high-energy laser systems.	HRC	Training beyond 12 nm; no historic properties.
Medium Range Interceptor Capability	Ground personnel defend against threat missiles and aircraft with vehicle-launched ground-to-air missile systems.	HRC (PMRF)[1]	Projectiles will impact beyond 12 nm; no historic properties.
Missile Exercise Air-to-Air	Fixed wing and helicopter aircrews fire air-to-air missiles at air targets.	HRC	Training beyond 12 nm; no historic properties.
Missile Exercise Man-portable Air Defense System	Personnel employ shoulder-fired surface-to-air missiles at air targets.	HRC (PMRF)	Training within established training areas and ranges; no historic properties.
Missile Exercise Surface-to-Air	Surface ship crews fire surface-to-air missiles at air targets.	HRC	Training beyond 12 nm; no historic properties.
Amphibious Warfare			

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Amphibious Assault	Large unit forces move ashore from amphibious ships at sea for the immediate execution of inland objectives. Only at-sea activities are included. No activities would occur on land.	HRC (Kaneohe Bay, Marine Corps Base Hawaii [MCBH], Marine Corps Training Area Bellows [MCTAB], PMRF)	Amphibious vehicles transit along designated routes to established landing areas; follow installation SOPs for cultural resources to avoid effects to historic properties.
Amphibious Operations in a Contested Environment	Navy and Marine Corps forces conduct operations in coastal and offshore waterways against air, surface, and subsurface threats. Only at-sea activities are included. No activities would occur on land.	HRC (Kaneohe Bay, MCBH, MCTAB, PMRF)	Amphibious vehicles transit along designated routes to established landing areas; follow installation SOPs for cultural resources to avoid effects to historic properties.
Amphibious Raid	Small unit forces move from amphibious ships at sea to shore locations for a specific short-term mission. These are quick operations with as few personnel as possible. Only at-sea activities are included. No activities would occur on land.	HRC (Kaneohe Bay, MCBH, MCTAB, PMRF)	Amphibious vehicles transit along designated routes to established landing areas; follow installation SOPs for cultural resources to avoid effects to historic properties.
Amphibious Vehicle Maneuvers	Small boat crews practice the employment of amphibious vehicles. Only at-sea activities are included. No activities would occur on land.	HRC (Kaneohe Bay, MCBH, MCTAB, PMRF)	Amphibious vehicles transit along designated routes to established landing areas; follow installation SOPs for cultural resources to avoid effects to historic properties.
Naval Surface Fire Support Exercise – At Sea	Surface ship crews fire large-caliber guns at a passive acoustic hydrophone scoring system. The land target is simulated at sea.	HRC (Barking Sands Tactical Underwater Range Expansion [BARSTUR], Barking	Training beyond 12 nm; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
		Sands Underwater Range [BSURE]	
Non-Combat Amphibious Operation	Amphibious vehicles move personnel and equipment from ships to shore and back. Only at-sea activities are included. No activities would occur on land.	HRC (MCBH, MCTAB, PMRF)	Amphibious vehicles transit along designated routes to established landing areas; follow installation SOPs for cultural resources to avoid effects to historic properties.
Shore-to-Surface Artillery Exercise	Amphibious land-based forces fire artillery guns at surface targets. Only at-sea activities are included. No activities would occur on land.	HRC (PMRF Training Area)	Projectiles will impact beyond 3 nm; no historic properties.
Shore-to-Surface Missile Exercise	Amphibious land-based forces fire anti-surface missiles, rockets, and loitering munitions at surface targets. Only at-sea activities are included. No activities would occur on land.	HRC (PMRF Training Area)	Projectiles will impact beyond 12 nm; no historic properties.
Anti-Submarine Warfare			
Anti-Submarine Warfare Torpedo Exercise – Helicopter	Helicopter crews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft	Maritime patrol aircraft aircrews search for, track, and detect submarines. Recoverable air launched torpedoes are employed against submarine targets.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Anti-Submarine Warfare Torpedo Exercise – Ship	Surface ship crews search for, track, and detect submarines. Exercise torpedoes are used.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Anti-Submarine Warfare Torpedo Exercise – Submarine	Submarine crews search for, track, and detect submarines. Exercise torpedoes are used.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Anti-Submarine Warfare Tracking Exercise – Helicopter	Helicopter crews search for, track, and detect submarines.	HRC (BARSTUR, BSURE)	No historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Anti-Submarine Warfare Tracking Exercise – Long-Range Unmanned Surface Vessel	Unmanned surface vessels search for, detect, and track a sub-surface target simulating a threat submarine with the goal of determining a firing solution that could be used to launch a torpedo.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft	Maritime patrol aircraft aircrews search for, track, and detect submarines.	HRC (BARSTUR, BSURE)	No historic properties.
Anti-Submarine Warfare Tracking Exercise -Ship	Surface ship crews search for, track, and detect submarines.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Anti-Submarine Warfare Tracking Exercise - Submarine	Submarine crews search for, track, and detect submarines.	HRC (BARSTUR, BSURE)	Training within an established underwater training range or beyond 3 nm; no historic properties.
Training and End-to-End Mission Capability Verification – Torpedo	A submarine launches exercise and explosive torpedoes at a suspended target.	HRC (BARSTUR, BSURE)	Training beyond 12 nm; no historic properties.
Electronic Warfare			
Counter Targeting Chaff Exercise – Aircraft	Fixed-wing aircraft and helicopter aircrews deploy chaff to disrupt threat targeting and missile guidance radars.	HRC	Training beyond 12 nm; no historic properties.
Counter Targeting Chaff Exercise – Ship	Surface ship crews deploy chaff to disrupt threat targeting and missile guidance radars.	HRC	Training beyond 12 nm; no historic properties.
Counter Targeting Flare Exercise	Fixed-winged aircraft and helicopter aircrews deploy flares to disrupt threat infrared missile guidance systems.	HRC	No historic properties.
Electronic Warfare Operations	Aircraft and surface ship crews control the electromagnetic spectrum used by enemy systems to degrade or deny the enemy's ability to take defensive actions.	HRC	No historic properties.
Expeditionary Warfare			
Dive and Salvage Operations	Navy divers perform dive operations and salvage training.	HRC (Kaneohe Bay, Naval Defense Sea Area [NDSA], Puuloa Underwater Range [PUR])	Pearl Harbor is a National Historic Landmark (NHL) and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the

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			defining characteristics that make Pearl Harbor a historic property; no historic properties identified at Kaneohe Bay, NDSA, or PUR.
Obstacle Loading	Military personnel use explosive charges to destroy barriers or obstacles to amphibious vehicle access to beach areas.	HRC (Barbers Point Underwater Range [BPUR], Ewa Training Minefield [ETM], Lima Landing [LL], Pearl Peninsula [PP], PUR)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties identified at BPUR, ETM, LL, PP, or PUR.
Personnel Insertion/ Extraction – Air	Personnel are inserted into a water objective via fixed-wing aircraft using parachutes or by helicopters via ropes or jumping into the water. Personnel are extracted by helicopters or small boats.	HRC (PP)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties identified at PP.
Personnel Insertion/ Extraction – Surface and Subsurface	Personnel are inserted into and extracted from an objective area by small boats or subsurface platforms.	HRC, to include Pearl Harbor	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy

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			is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Personnel Insertion/ Extraction Training – Swimmer/Diver	Divers and swimmers infiltrate harbors, beaches, or moored vessels and conduct a variety of tasks.	HRC, to include Pearl Harbor	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Small Boat Attack	Small attacks are conducted on boats. For this activity, one or two small boats or personal watercraft conduct attack activities on units afloat.	HRC, to include Pearl Harbor	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Mine Warfare			
Airborne Mine Countermeasure – Mine Detection	Helicopter aircrews detect mines using towed or laser mine detection systems.	HRC (BPUR, Barbers Point Harbor to Lighthouse Training Area [BPHLTA], ETM, NDSA, PUR, Kingfisher Training Minefield [KTM], Waiapuaa Bay [WB], PMRF Training Area)	Training within established training areas and ranges; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Airborne Mine Laying	Fixed-wing aircraft drop explosive and non-explosive mine shapes.	HRC (PMRF)	Training within established training areas and ranges; no historic properties.
Amphibious Breaching Operations	Amphibious forces use explosive clearing systems to clear simulated mines on beaches, shallow water, and surf zones for potential landing of personnel and vehicles.	HRC (BPUR, ETM, PUR, LL, PP)	Training within established training areas and ranges; no historic properties.
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercise	Maritime security personnel train to protect civilian ports against enemy efforts to interfere with access to those ports.	HRC (Honolulu Harbor, Kaneohe Bay, NDSA, Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Mine Countermeasure Exercise – Ship Sonar	Ship crews detect and avoid mines while navigating restricted areas or channels using active sonar.	HRC (Alalakeiki Channel, BPUR, ETM, Kalohi Channel, KTM, Maui Basin, NDSA, Pailolo Channel, PUR)	Training within established training areas and ranges; no historic properties.
Mine Countermeasures Mine Neutralization Remotely Operated Vehicle	Ship, small boat, and helicopter crews locate and disable mines using remotely operated underwater vehicles.	HRC (Alalakeiki Channel, BPHLTA, BPUR, ETM, Kahoolawe Sub Training Minefield [KSTM], Kalohi Channel, Kaneohe Bay, KTM, Maui Basin, MCTAB, NDSA, Pailolo Channel, PMRF Training Area, PUR, WB)	Training within established training areas and ranges; no historic properties.
Mine Neutralization Explosive Ordnance Disposal	Personnel disable threat mines using explosive charges.	HRC (BPUR, ETM, LL, PP, PUR)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
			Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties identified at PP.
Submarine Mine Avoidance Exercise	Submarine crews use active sonar or Unmanned Underwater Vehicles (UUVs), and shore-based personnel operate UUVs to detect and avoid training mine shapes or other underwater hazardous objects.	HRC (Alalakeiki Channel, KSTM, Kalohi Channel, Maui Basin, Pailolo Channel,)	Training within established training areas and ranges; no historic properties.
Submarine Mobile Mine and Mine Laying Exercise	Submarine crews and shore-based personnel operating a UUV deploy exercise (inert) mobile mines or mines.	HRC (Alalakeiki Channel, KSTM, Kalohi Channel, Maui Basin, Pailolo Channel,)	Training within established training areas and ranges; no historic properties.
Surface Ship Object Detection	Ship crews detect and avoid mines while navigating restricted areas or channels using active sonar.	HRC (NDSA, Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Training and End-to-End Mission Capability Verification – Mobile Mine and Mine	Submarine crew launches mobile mine(s) to a planned location. The mine(s) are subsequently recovered by an external source. Active sonar is used periodically. This exercise typically would involve only a single submarine, UUV, or surface craft.	HRC (Alalakeiki Channel, KSTM, Kalohi Channel, Maui Basin, Pailolo Channel,)	Training within established training areas and ranges; no historic properties.
Underwater Demolition Qualification and Certification	Navy divers conduct various levels of training and certification in placing underwater demolition charges.	HRC (BPUR, ETM, PUR, LL, PP)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
			defining characteristics that make Pearl Harbor a historic property; no historic properties identified at BPUR, ETM, PUR, LL, or PP.
Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation	Personnel locate mines, perform mine neutralization, raise, and tow mines to the beach, and conduct exploitation operations for intelligence gathering.	HRC (BPUR, ETM, Kaneohe Bay, MCTAB, NDSA, PMRF Training Area, PUR, WB)	Training within established training areas and ranges; no historic properties.
Surface Warfare			
Bombing Exercise Air-to-Surface	Fixed-wing aircrews deliver bombs against surface targets at sea.	HRC	Training beyond 3 nm; no historic properties.
Gunnery Exercise Air-to-Surface Medium-caliber	Fixed-wing and helicopter aircrews fire medium-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Air-to-Surface Small-caliber	Helicopter and tilt-rotor aircrews use small-caliber guns to engage surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Boat Medium-Caliber	Small boat crews fire medium-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Boat Small-Caliber	Small boat crews fire small-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Ship Large-caliber	Surface ship crews fire large-caliber guns at surface targets at sea.	HRC	Training beyond 3 nm; no historic properties.
Gunnery Exercise Surface-to-Surface Ship Medium-Caliber	Surface ship crews fire medium-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Ship Small-Caliber	Surface ship crews fire small-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Laser Targeting – Aircraft	Fixed-wing and helicopter aircrews illuminate surface targets at sea with lasers.	HRC	Training beyond 12 nm; no historic properties.
High-Energy Laser Exercise Surface-to-Surface	Surface ship crews illuminate air and surface targets at sea with high-energy laser systems.	HRC	Training beyond 12 nm; no historic properties.
Maritime Security Operations	Helicopter, surface ship, and small boat crews conduct security operations at sea, to include visit, board, search and seizure; maritime interdiction operations; force protection; and anti-piracy operations.	HRC	Training within established training areas and ranges; no historic properties.
Missile Exercise Air-to-Surface	Fixed-wing and helicopter aircrews fire air-to-surface missiles at surface targets at sea.	HRC	Training beyond 12 nm; no historic properties.
Missile Exercise Air-to-Surface Rocket	Helicopter aircrews fire both precision-guided and unguided rockets at surface targets at sea.	HRC	Training beyond 12 nm; no historic properties.
Missile Exercise Surface-to-Surface	Surface ship crews defend against surface threats (ships or small boats) and engage them with missiles.	HRC	Training beyond 12 nm; no historic properties.
Sinking Exercise	Aircraft, ship, and submarine crews deliberately sink a seaborne target, usually a decommissioned ship made environmentally safe for sinking according to U.S. Environmental Protection Agency standards, with a variety of ordnance.	HRC	Training beyond 12 nm; no historic properties.
Surface Warfare Torpedo Exercise – Submarine	Submarine crews search for, detect, and track a surface ship simulating a threat surface ship with the goal of determining a firing solution that could be used to launch a torpedo with the intent to simulate destroying the targets.	HRC (BARSTUR, BSURE)	Training within an established underwater training range; no historic properties.
Training and End-to-End Mission Capability Verification – Submarine Missile Maritime	Submarine crews launch missile(s) which may have an explosive warhead at a maritime target simulating an adversary surface ship with the goal of destroying or disabling adversary surface ship.	HRC (BARSTUR, BSURE)	Training within an established underwater training range; no historic properties.
Other Training			
Aerial Firefighting	Helicopter aircrews conduct proficiency training in the use of airborne firefighting water baskets, dropping seawater on terrestrial targets.	HRC	Training within established training areas and ranges; no historic properties.
At-sea Vessel Refueling Training	Navy personnel would practice boat handling skills to maneuver the small vessels alongside a larger vessel.	HRC	Training within established training areas and ranges; no historic properties.
Combat Swimmer/Diver Training and Certification	Navy personnel conduct combat swimming conditioning swims and surf passage to execute a variety of tasks in the open water and littoral waterways.	HRC	Training within established training areas and ranges; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Kilo Dip	Functional check of the dipping sonar prior to conducting a full test or training event on the dipping sonar.	HRC (BARSTUR, BSURE)	Training beyond 3 nm; no historic properties.
Multi-Domain Unmanned Autonomous Systems	Multi-domain (surface, subsurface, and airborne) unmanned autonomous systems are launched from land, ships, and boats, in support of intelligence, surveillance, and reconnaissance operations; and deliver munitions or other non-munition systems to support mission and intelligence requirements.	HRC	Training within established training areas and ranges; no historic properties.
Precision Anchoring	Surface ship crews release and retrieve anchors in designated locations.	HRC (NDSA)	Anchorages are already established; anchorages do not include historic properties.
Search and Rescue	Navy and Coast Guard helicopter and ship crews practice the skills required to recover personnel lost at sea.	HRC	Training within established training areas and ranges; no historic properties.
Ship-to-Shore Fuel Transfer Training	Personnel train in the transfer of petroleum (though only sea water is used during training) from a ship to the shore.	HRC (WB)	Training within established training areas and ranges; no historic properties.
Submarine Navigation Exercise	Submarine crews operate sonar for navigation and object detection while transiting into and out of port during reduced visibility.	HRC (NDSA, Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Submarine Sonar Maintenance and Systems Checks	Maintenance of submarine sonar systems is conducted pierside or at sea.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Submarine Under Ice Training and Certification	Submarine crews train to operate under ice. Ice conditions are simulated during training and certification events.	HRC	Training beyond 12 nm; no historic properties.
Submarine and UUV Subsea and Seabed Warfare Exercise	Submarine crews and shore-based operators train to launch or recover and operate all classes of UUVs in the subsea and seabed environment in order to defend deep ocean and seabed infrastructure or take offensive action against a simulated adversary's subsea and seabed infrastructure.	HRC	Training within established training areas and ranges; no historic properties.
Surface Ship Sonar Maintenance and Systems Checks	Maintenance of surface ship sonar systems is conducted pierside or at sea.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Training and End-to-End Mission Capability Verification – Subsea and Seabed Warfare Kinetic Effectors	Submarine crews or shore-based operators employ UUV with munitions or non-munition systems on the sea floor or in the water column.	HRC	Training within established training areas and ranges; no historic properties.
Training and End-to-End Mission Capability Verification – Unmanned Aerial Vehicle (UAV)	Submarine crews or shore-based personnel controlling a UUV launch a capsule containing a UAV. The canister is deployed underwater and ascends to a programmed depth. The canister subsequently launches a UAV, and the canister sinks.	HRC	Training within established training areas and ranges; no historic properties.
Underwater Survey	Personnel perform methodical reconnoitering of beaches and surf conditions during the day and night to find and clear underwater obstacles and determine the feasibility of landing an amphibious force on a particular beach.	HRC (MCTAB, WB)	Training within established training areas and ranges; no historic properties.
Unmanned Aerial System Training and Certification	Submarines launch unmanned aerial systems while submerged.	HRC	Training within established training areas and ranges; no historic properties.
Unmanned Underwater Vehicle Training – Certification and Development Exercises	Unmanned underwater vehicle certification involves training with unmanned platforms to ensure submarine crew proficiency. Tactical development involves training with various payloads for multiple purposes to ensure that the systems can be employed effectively in an operational environment.	HRC	Training within established training areas and ranges; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Waterborne Training	Small boat crews conduct a variety of training, including boat launch and recovery, operation of crew-served unmanned vehicles, mooring to buoys, anchoring, and maneuvering. Small boats include rigid hull inflatable boats, and riverine patrol, assault, and command boats up to approximately 50 feet in length.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.

[1] Parenthetical notes in location column indicate typical locations

Table 3: Coast Guard Proposed Training Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Air Warfare			
Gunnery Exercise Surface-to-Air Large Caliber	Surface ship crews fire large-caliber guns at air targets.	HRC	Training beyond 3 nm; no historic properties.
Gunnery Exercise Surface-to-Air Medium Caliber	Surface ship crews fire medium-caliber guns at air targets.	HRC	Training beyond 3 nm; no historic properties.
Electronic Warfare			
Counter Targeting Chaff Exercise – Ship	Surface ship crews deploy chaff to disrupt threat targeting and missile guidance radars.	HRC	Training beyond 12 nm; no historic properties.
Expeditionary Warfare			
Underwater Construction Team Training	Coast Guard divers perform cutting, welding, assembly, and installation of deep-water structures, mooring systems, underwater instrumentation, and other systems as needed.	HRC[1] (Kaneohe Bay, NDSA, PUR, Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
			Pearl Harbor a historic property; no historic properties affected.
Surface Warfare			
Gunnery Exercise Air-to-Surface Medium Caliber	Fixed-wing and helicopter aircrews fire medium-caliber guns at surface targets.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Small boat crews fire medium-caliber guns at surface targets.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Small boat crews fire small-caliber guns at surface targets.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Ship Large Caliber	Surface ship crews fire large-caliber guns at surface targets.	HRC	Training beyond 3 nm; no historic properties.
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	Surface ship crews fire medium-caliber guns at surface targets.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Ship Small Caliber	Surface ship crews fire small-caliber guns at surface targets.	HRC	Training within established training areas and ranges; no historic properties.
Laser Targeting – Ship	Surface ship crews illuminate air and surface targets with high-energy laser systems.	HRC	Training beyond 12 nm; no historic properties.
Maritime Security Operations	Helicopter, surface ship, and small boat crews conduct security operations at sea, to include visit, board, search, and seizure; maritime interdiction operations; force protection; ship force protection; and anti-piracy operations.	HRC	Training within established training areas and ranges; no historic properties.
Other Training			
Precision Anchoring	Surface ship crews release and retrieve anchors in designated locations.	HRC (NDSA)	Anchorages are already established; anchorages

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
			do not include historic properties.
Search and Rescue	Navy and Coast Guard helicopter and ship crews practice the skills required to recover personnel lost at sea.	HRC	Training within established training areas and ranges; no historic properties.
Unmanned Aerial System Training and Certification	Coast Guard crews launch unmanned aerial systems.	HRC	Training within established training areas and ranges; no historic properties.
Unmanned Underwater Vehicle Training – Certification and Development Exercises	Unmanned underwater vehicle certification involves training with unmanned platforms to ensure submarine crew proficiency. Tactical development involves training with various payloads for multiple purposes to ensure that the systems can be employed effectively in an operational environment.	HRC	Training within established training areas and ranges; no historic properties.
Waterborne Training	Small boat crews conduct a variety of training, including boat launch and recovery, operation of crew-served unmanned vehicles, mooring to buoys, anchoring, safety swimmer and safety lookout qualifications, shallow water training, and maneuvering. Small boats include rigid hull inflatable boats, and riverine patrol, assault, and command boats up to approximately 50 feet in length.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.

[1] Parenthetical notes in location column indicate typical locations

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Table 4: U.S. Army Proposed Training Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Air Warfare			
Missile Exercise – Man Portable Air Defense System	Army and Marine Corps personnel employ the Man-Portable Air Defense Systems, a shoulder fired surface to air missile, against threat missiles or aircraft. An exercise involves personnel firing the Man-Portable Air Defense System at remote piloted or other aerial targets. Activity is conducted by combat forces firing from shore or shipboard at targets over the water. Small boats are used to ensure range safety.	HRC (PMRF)[1]	Training within established training areas and ranges; no historic properties.
Amphibious Warfare			
Shore-to-Surface Artillery Exercise	Amphibious land-based forces fire artillery guns at surface targets. Only at-sea activities are included. No activities would occur on land.	HRC (PMRF Training Area)	Projectiles will impact beyond 3 nm; no historic properties.
Shore-to-Surface Missile Exercise	Amphibious land-based forces fire anti-surface missiles, rockets, and loitering munitions at surface targets. Only at-sea activities are included. No activities would occur on land.	HRC (PMRF Training Area)	Projectiles will impact beyond 12 nm; no historic properties.
Surface Warfare			
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Small boat crews fire medium-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Small boat crews fire small-caliber guns at surface targets at sea.	HRC	Training within established training areas and ranges; no historic properties.

[1] Parenthetical notes in location column indicate typical locations

Table 5: U.S. Air Force Proposed Training Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Air Warfare			
Gunnery Exercise Air-to-Air Medium Caliber	Fixed-wing aircraft fire medium-caliber guns at air targets.	Hawaii Study Area	Training beyond 12 nm; no historic properties.

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Table 6: Naval Air Systems Command Proposed Testing Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Air Warfare			
Air Combat Maneuver Test	Aircrews engage in flight maneuvers designed to gain a tactical advantage during combat.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Air Platform – Vehicle Test	Testing performed to quantify the flying qualities, handling, airworthiness, stability, controllability, and integrity of an air platform or vehicle. No explosive weapons are released during an air platform-vehicle test.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Air Platform Weapons Integration Test	Testing performed to quantify the compatibility of weapons with the aircraft from which they would be launched or released. Non-explosive weapons or shapes are used.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Intelligence, Surveillance, and Reconnaissance Test	Aircrews use all available sensors to collect data on threat vessels.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Anti-Submarine Warfare			
Anti-Submarine Warfare Torpedo Test (Aircraft)	This event is similar to the training event torpedo exercise. Test evaluates anti-submarine warfare systems onboard rotary-wing and fixed-wing aircraft and the ability to search for, detect, classify, localize, track, and attack a submarine or similar target.	Hawaii Study Area	Training beyond 3 nm; no historic properties.
Anti-Submarine Warfare Tracking Test (Fixed Wing)	The test evaluates the sensors and systems used by maritime patrol aircraft to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.	Hawaii Study Area	Training beyond 3 nm; no historic properties.
Anti-Submarine Warfare Tracking Test (Rotary Wing)	The test evaluates the sensors and systems used by helicopters to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.	Hawaii Study Area	Training beyond 3 nm; no historic properties.
Kilo Dip Test	Functional check of a helicopter-deployed dipping sonar system prior to conducting a testing or training event using the dipping sonar system.	Hawaii Study Area	Training beyond 3 nm; no historic properties.
Sonobuoy Lot Acceptance Test	Sonobuoys are deployed from surface vessels and aircraft to verify the integrity and performance of a lot or group of sonobuoys in advance of delivery to the fleet for operational use.	Hawaii Study Area	Training beyond 3 nm; no historic properties.
Electronic Warfare			
Chaff Test	This event is similar to the training event counter targeting chaff exercise – aircraft. Chaff tests evaluate newly developed or enhanced chaff, chaff dispensing equipment, or modified aircraft systems against chaff deployment. Tests may also train pilots and aircrew in the use of new chaff dispensing equipment. Chaff tests are often conducted with flare tests and air combat maneuver events, as well as other test events, and are not typically conducted as standalone tests.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Electronic Systems Test	Test that evaluates the effectiveness of electronic systems to control, deny, or monitor critical portions of the electromagnetic spectrum. In general, electronic warfare testing will assess the performance of three types of electronic warfare systems: electronic attack, electronic protect, and electronic support.	Hawaii Study Area	Training beyond 12 nm; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Flare Test	This event is similar to the training event flare exercise. Flare tests evaluate newly developed or enhanced flares, flare dispensing equipment, or modified aircraft systems against flare deployment. Tests may also train pilots and aircrew in the use of newly developed or modified flare deployment systems. Flare tests are often conducted with chaff tests and air combat maneuver events, as well as other test events, and are not typically conducted as standalone tests.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Mine Warfare			
Airborne Dipping Sonar Minehunting Test	A mine-hunting dipping sonar system that is deployed from a helicopter and uses high-frequency sonar for the detection and classification of bottom and moored mines	Hawaii Study Area	Training within established training areas and ranges; no historic properties.
Airborne Laser Mine Detection System Test	An airborne mine hunting test of a laser-based mine detection system, that is operated from a helicopter and evaluates the system's ability to detect, classify, and fix the location of floating and near-surface, moored mines. The system uses a non-weaponized laser to locate mines.	Hawaii Study Area	Training within established training areas and ranges; no historic properties.
Airborne Mine Neutralization System Test	A test of the airborne mine neutralization system evaluates the system's ability to detect and destroy mines from an airborne mine countermeasures capable helicopter. The Airborne Mine Neutralization System uses up to four unmanned underwater vehicles equipped with high-frequency sonar, video cameras, and explosive and non-explosive neutralizers.	Hawaii Study Area	Training within established training areas and ranges; no historic properties.
Airborne Sonobuoy Minehunting Test	A mine-hunting system made up of sonobuoys deployed from a helicopter. A field of sonobuoys, using high-frequency sonar, is used to detect and classify bottom and moored mines.	Hawaii Study Area	Training within established training areas and ranges; no historic properties.
Mine Laying Test	Fixed-wing aircraft evaluate the performance of mine laying equipment and software systems to lay mines. A mine test may also train aircrew in laying mines using a new or enhanced mine deployment system.	Hawaii Study Area	Training within established training areas and ranges; no historic properties.
Surface Warfare			
Air-to-Surface Bombing Test	This event is similar to the training event bombing exercise air-to-surface. Fixed-wing aircraft test the delivery of bombs against surface maritime targets with the goal of evaluating the bomb, the bomb carry and delivery system, and any associated systems that may have been newly developed or enhanced.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Air-to-Surface Gunnery Test	This event is similar to the training event gunnery exercise (air to surface). Fixed-wing and rotary-wing aircrews evaluate new or enhanced aircraft guns against surface maritime targets to test that the gun, gun ammunition, or associated systems meet required specifications or to train aircrew in the operation of a new or enhanced weapon system.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Air-to-Surface High-Energy Laser Test	High-energy lasers would be employed from helicopters (e.g., MH-60) either hovering or in forward flight, targeting unmanned surface targets.	Hawaii Study Area	Training beyond 12 nm; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Air-to-Surface Laser Targeting Test	Aircrew use laser targeting devices integrated into aircraft or weapons systems to evaluate targeting accuracy and precision and to train aircrew in the use of newly developed or enhanced laser targeting devices designed to illuminate designated targets for engagement with laser-guided weapons.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Air-to-Surface Missile Test	This event is similar to the training event missile exercise air-to-surface. Test may involve both fixed-wing and rotary-wing aircraft launching missiles at surface maritime targets to evaluate the weapons system or as part of another system's integration test.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Rocket Test	Rocket tests evaluate the integration, accuracy, performance, and safe separation of guided and unguided 2.75-inch rockets fired from a hovering or forward flying helicopter.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Other Testing Activities			
Acoustic and Oceanographic Research	Active transmissions within the band 10 hertz-100 kilohertz from sources deployed from ships and aircraft	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Air Platform Shipboard Integrate Test	Fixed wing and rotary wing aircraft are tested to determine operability from shipboard platforms and performance of shipboard physical operations, and to verify and evaluate communications and tactical data links.	Hawaii Study Area	Training beyond 12 nm; no historic properties.
Undersea Range System Test	Post installation node survey and test and periodic testing of range Node transmit functionality.	Hawaii Study Area	Training within established training areas and ranges; no historic properties.

Table 7: Naval Facilities Engineering and Expeditionary Warfare Center Proposed Testing Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Unmanned Systems			
Ocean Energy and Cable Systems Research	Testing of ocean and marine energy harvesting/producing systems, energy storage and distribution, and subsea cable network deployment and interoperability.	HRC (Wave Energy Test Site)[1]	Training within established training areas and ranges; no historic properties.

[1] Parenthetical notes in location column indicate typical locations

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Table 8: Naval Sea Systems Command Proposed Testing Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Anti-Submarine Warfare			
Anti-Submarine Warfare Mission Package Testing	Ships and their supporting platforms (e.g., rotary-wing aircraft, unmanned aerial systems) detect, localize, and prosecute submarines.	HRC	Training within established training areas and ranges; no historic properties.
At-Sea Sonar Testing	At-sea testing to ensure systems are fully functional in an open ocean environment.	HRC (PMRF Training Area)[1]	Training beyond 3 nm; no historic properties.
Countermeasure Testing	Countermeasure testing involves the testing of systems that detect, localize, and engage incoming weapons, including marine vessel targets and airborne missiles. Testing includes surface ship torpedo defense systems, marine vessel stopping payloads, and airborne decoys against targets.	HRC (PMRF Training Area)	Training beyond 3 nm; no historic properties.
Pierside Sonar Testing	Pierside testing to ensure systems are fully functional in a controlled pierside environment prior to at-sea test activities and complete any troubleshooting.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Surface Ship Sonar Testing/Maintenance	Pierside and at-sea testing of ship systems occur periodically following major maintenance periods and for routine maintenance.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Torpedo (Explosive) Testing	Air, surface, or submarine crews employ explosive and non-explosive torpedoes against artificial targets.	HRC	Training beyond 3 nm; no historic properties.
Torpedo (Non-Explosive) Testing	Air, surface, or submarine crews employ non-explosive torpedoes against submarines, surface vessels, or artificial targets.	HRC (BARSTUR, Maui Basin, PMRF Training Area)	Training beyond 3 nm; no historic properties.
Electronic Warfare			
Radar and Other Systems Testing	Test may include use of military or commercial radar, communication systems (or simulators), passive and active electronic warfare systems, electro-optical/infrared systems, or high- and low-energy lasers. Testing may occur aboard a ship against drones, small boats, rockets, missiles, or other targets.	HRC (PMRF Training Area)	Training beyond 3 nm; no historic properties.
Mine Warfare			
Mine Countermeasure Mission Package Testing	Vessels and associated aircraft conduct mine countermeasure operations.	HRC (KSTM, PMRF Training Area)	Training within established training areas and ranges; no historic properties.
Mine Detection and Classification Testing	Air, surface, and subsurface vessels and systems detect, classify, and avoid mines and mine-like objects. Vessels also assess their potential susceptibility to mines and mine-like objects.	HRC (KSTM)	Training within established training areas and ranges; no historic properties.
Surface Warfare			
Missile and Rocket Testing	Missile and rocket testing includes various missiles or rockets fired from submarines and surface combatants. Testing of the launching system and ship defense is performed.	HRC (PMRF Training Area)	Training beyond 12 nm; no historic properties.
Unmanned Systems			
Unmanned Underwater Vehicle Testing	Testing involves the production or upgrade of unmanned underwater vehicles. This may include testing mine detection capabilities, evaluating the basic functions of individual platforms, or conducting complex events with multiple vehicles.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Vessel Evaluation			

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Air Defense Testing	Test the ship's capability to detect, identify, track, and successfully engage live and simulated targets. Gun systems are tested using explosive and non-explosive rounds.	HRC (PMRF Training Area)	Training beyond 12 nm; no historic properties.
In-Port Maintenance Testing	Each combat system is tested to ensure they are functioning in a technically acceptable manner and are operationally ready to support at-sea testing.	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Propulsion Testing	Ship is run at high speeds in various formations (e.g., straight-line and reciprocal paths).	HRC	Training beyond 12 nm; no historic properties.
Signature Analysis Operations	Surface ship and submarine testing of electromagnetic, acoustic, optical, and radar signature measurements.	HRC	Training within established training areas and ranges; no historic properties.
Submarine Sea Trials – Weapons System Testing	Submarine weapons and sonar systems are tested at-sea to meet integrated combat system certification requirements.	HRC	Training beyond 12 nm; no historic properties.
Surface Warfare Testing	Tests capability of shipboard sensors to detect, track, and engage surface targets. Testing may include ships defending against surface targets using explosive and non-explosive rounds, gun system structural test firing, and demonstration of the response to Call for Fire against land-based targets (simulated by sea-based locations).	HRC (PMRF Training Area)	Training beyond 12 nm; no historic properties.
Undersea Warfare Testing	Ships demonstrate capability of countermeasure systems and underwater surveillance, weapons engagement, and communications systems. This tests ships' ability to detect, track, and engage undersea targets.	HRC (PMRF Training Area)	Training beyond 12 nm; no historic properties.
Other Testing			
Acoustic and Oceanographic Research	Research using active transmissions from sources deployed from ships, aircraft, and unmanned underwater vehicles. Research sources can be used as proxies for current and future Navy systems.	HRC (PMRF Training Area)	Training beyond 12 nm; no historic properties.
Countermeasure Testing	Countermeasure testing involves the testing of systems that detect, localize, and engage incoming weapons, including marine vessel targets and airborne missiles. Testing includes surface ship torpedo defense systems, marine vessel stopping payloads, and airborne decoys against targets.	HRC (Alalakeiki Channel, Kalohi Channel, Maui Basin, Pailolo Channel, PMRF Training Area)	Training beyond 3 nm; no historic properties.

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Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Insertion/Extraction	Testing of submersibles capable of inserting and extracting personnel and payloads into denied areas from strategic distances.	HRC	Training within established training areas and ranges; no historic properties.
Semi-Stationary Equipment Testing	Semi-stationary equipment (e.g., hydrophones) is deployed to determine functionality.	HRC (Pearl Harbor)	Training within established training areas and ranges; no historic properties.

[1] Parenthetical notes in location column indicate typical locations

Table 9: Naval Information Warfare Systems Command Proposed Testing Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Acoustic and Oceanographic Science and Technology			
Acoustic, Oceanographic, and Energy Research	Research using active transmissions from sources deployed from ships, aircraft, and unmanned underwater vehicles. Research sources can be used as proxies for current and future Navy systems. Active acoustic transmissions used for engineering tests of acoustic sources, validation of ocean acoustic models, tests of signal processing algorithms, and characterization of acoustic interactions with the ocean bottom, fish and ocean surface. Standard oceanographic research sensing (acoustic Doppler current profiler, fathometer-like systems) also to be employed.	HRC (Pearl Harbor)[1]	Pearl Harbor is an NHL and listed on the NRHP as a district; includes submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Other Testing			
Communications	Testing of maritime communications, underwater network systems with fiber optics cables, laser communications, acoustic modem networks, and launching of communication payloads and objects.	HRC	Training within established training areas and ranges; no historic properties.
Intelligence, Surveillance, Reconnaissance	Testing deployable autonomous undersea technologies that may include mine detection and classification, detection and classification of targets of interest, sensors on the undersea systems testbed, expansion of the undersea systems testbed with fiber optic cables and nodes, sensor systems to detect	HRC (Pearl Harbor)	Pearl Harbor is an NHL and listed on the NRHP as a district; includes

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	mine shapes on ship hulls and pier structures, sensors for swimmer interdiction and other threats, and sensor systems that can detect explosive, radioactive, and other signatures of concern.		submerged ships (USS Arizona, USS Utah); use of Pearl Harbor by the Navy is consistent with the defining characteristics that make Pearl Harbor a historic property; no historic properties affected.
Vehicle Testing	Testing of surface, subsurface and airborne vehicles, sensor systems, payloads, communications, and navigation which may involve autonomous underwater vehicles, autonomous surface vehicles, and autonomous aerial vehicles. Testing may involve evaluating individual vehicles and payloads or conducting complex events with multiple vehicles.	HRC	Training within established training areas and ranges; no historic properties.

[1] Parenthetical notes in location column indicate typical locations

Table 10: Office of Naval Research Proposed Testing Activity Descriptions in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Acoustic and Oceanographic Science and Technology			
Acoustic and Oceanographic Research	Research involving passive acoustic and oceanographic sensing, as well as active transmissions from sources deployed from ships, aircraft, and unmanned underwater vehicles. Research sources serve as proxies for current and future Navy systems.	HRC	Training within established training areas and ranges; no historic properties.
Large Displacement Unmanned Underwater Vehicle Testing	Autonomy testing and environmental data collection with Large Displacement Unmanned Underwater Vehicles	HRC	Training within established training areas and ranges; no historic properties.
Long Range Acoustic Communications	Bottom mounted acoustic source will transmit a variety of acoustic communications sequences that will be recorded by a variety of fixed and mobile platforms at ranges from the 100s to the 1,000s of kilometers.	HRC	Training beyond 3 nm; no historic properties.
Mine Countermeasure Technology Research	Test involves the use of broadband acoustic sources on unmanned underwater vehicles.	HRC	Training within established training areas and ranges; no historic properties.

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ENCLOSURE 1: Hawaii-California Training and Testing Section 106 Supplemental Information

Table 11: List of New Training and Testing Activities in the Hawaii Study Area

Activity Name	*Activity Description*	*Location*	*Potential Effect to Historic Properties*
Deployment of Seafloor Cables	Activities include placing items or cables on the seafloor.	HRC (MCBH, PMRF)[1]	Training within established training areas and ranges; no historic properties.
Installation and Maintenance of Mine Training Areas	Support crews install, move, and remove mine countermeasure targets. No explosives associated with activity. Once the minefield is in place, submarines will attempt to detect the mines.	HRC	Training within established training areas and ranges; no historic properties.
Gunnery and Missile firing from PMRF	Army and USMC forces will fire missiles and gunnery from Pacific Missile Range Facility against air targets and surface targets. All missiles and gunnery land beyond 3 nm.	PMRF	Projectiles will impact beyond 3 nm; no historic properties.
Installation and Maintenance of an Underwater Platform	An underwater landing platform is required to facilitate underwater vehicle pilot proficiency training. The platform to be installed in Hawaii was previously approved in 1999, installed in 2001, and removed in 2009. The 2001 installation approval included a Categorical Exclusion, informal consultation with NMFS Pacific Islands Area Office, and approval by the Army pursuant to Section 10 of the Rivers and Harbors Act. The intent is to reinstall a newly designed platform in the previously approved location in the Naval Defense Sea Area outside the entrance to Pearl Harbor.	NDSA	Pearl Harbor is a NHL and listed on the NRHP as a district; includes submerged ships; use of Pearl Harbor by the DON is consistent with the defining characteristics that make Pearl Harbor a historic property. No historic properties affected.
Use of unmanned air vehicles or systems (UAVs or UASs)	This is not necessarily a new activity, but many existing activities will now include UAVs, UASs, surface vessels (USVs), and underwater vehicles (UUVs).	HRC	Training within established training areas and ranges. UAS operate following FAA rules and guidelines; no historic properties affected.

[1] Parenthetical notes in location column indicate typical locations

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ENCLOSURE 2: Hawaii State Historic Preservation Division's Concurrence Letter to the Department of the Navy for the Hawaii-Southern California Training and Testing Letter, December 2018

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

December 11, 2018

IN REPLY REFER TO:
Log No.: 2018.02893
Doc. No.: 1812AD01
Archaeology
History and Culture

L. M. Foster
U.S. Department of the Navy
Commander United States Pacific Fleet
250 Makalapa Drive
Pearl Harbor, Hawai'i 96860-3131
c/o: Coral.Rasmussen@navy.mil

Dear L. M. Foster:

SUBJECT: **National Historic Preservation Act (NHPA) Section 106 Review –**
Request for Concurrence with the Effect Determination
Proposed Hawaii-Southern California Training and Testing Activities
Ref. No. 5090 N465/1619
Hawai'i Statewide

On October 12, 2018, the State Historic Preservation Division (SHPD) received a letter dated October 4, 2018 from the Department of the Navy (Navy) requesting the State Historic Preservation Officer's (SHPO's) concurrence with their project effect determination of *no historic properties affected* for the proposed Hawaii-Southern California Training and Testing Activities across the state of Hawai'i (Ref. No. 5090 N465/1411). The SHPO did not concur stating in a letter dated November 8, 2018 that additional work was required of the Navy (SHPD Log No. 2018.02410, Doc. No. 1811SH02). On several occasions in November and December, the Navy met with SHPD staff in an attempt to resolve the concerns raised by SHPD. On December 7, 2018, the Navy submitted a subsequent letter to address the SHPO's concerns.

The proposed undertaking intends to conduct military readiness activities primarily within existing range complexes and operation areas at sea off the coasts of Hawai'i and Southern California on the high seas during vessel transit between these areas and at select Navy pier side and harbor locations; no terrestrial activities are included as part of this undertaking. Although the undertaking includes both the Southern California Range Complex (SOCAL) and the Hawai'i Range Complex (HRC), the Navy's Section 106 letters are limited to consultation for the Hawai'i Range Complex and a separate consultation was conducted for SOCAL with the California SHPO.

The Navy has divided the Hawaii portions of the training area into four zones that reflect the different uses for consultation purposes.

Zone 1 consists of training and testing activities outside the U.S. territorial waters (>12 nautical miles from shore). Training and testing in this zone includes a transit corridor between California and Hawai'i. The Navy asserts that Zone 1 is outside U.S. territorial waters and therefore outside the jurisdiction of Section 106 Consultation.

Zone 2 consists of training and testing activities within designated military training ranges and testing locations. The Navy states these training and testing areas were established more than three decades ago. Portions of the Shallow Water Training Range off Kaua'i and Kingfisher Training Minefield off Ni'ihau are within U.S. territorial waters. Barbers Point Underwater Range, Puuloa Underwater Range, Ewa Training Minefield, and the amphibious landing at the boat ramp at Kawaihae Harbor on Hawai'i Island and the beaches at Marine Corps Base Hawaii (MCBH) and Marine Corps Training Area Bellows (MCTAB) off O'ahu are within U.S. territorial waters. Portions of Fleet Operational Readiness Accuracy Check Site (FORACS) and Surface Ship Radiated Noise Measurement System off O'ahu area are also within U.S. territorial waters, as are the Kahoolawe Sub Training Minefield and the Hawaii Area Tracking System (HATS) off Maui and Kaho'olawe that use sonar to track submarine threats.

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ENCLOSURE 2: Hawaii State Historic Preservation Division's Concurrence Letter to the Department of the Navy for the Hawaii-Southern California Training and Testing Letter, December 2018

L. M. Foster
December 11, 2018
Page 2

Zone 3 consists of the non-military-controlled area within U.S. territorial waters around the main Hawaiian Islands. This area supports near shore vessel/boat movements and personnel insertion/extraction activities with swimmers and divers. Further from shore, typically beyond 3 nautical miles (nm) and within U.S. territorial waters, various military training and testing activities, such as small and medium caliber weapons firing (nonexplosive), anti-submarine warfare, and mine warfare occur in areas supported by appropriate water depths. Training and testing activities, in Zone 3 within 3 nm of shore, include in-water actions such as vessel/boat movements and personnel insertion/extraction activities. Ships and submarines maneuver in deep water and do not transit the near shore region.

Zone 4 is the area within the boundaries of the Papahānaumokuākea Marine National Monument. The Navy transits through the southeastern portion of the monument boundary on its way to and from the Western Pacific in an area of open water. The Navy does not transit between the islands or plan training and testing activities within the monument.

During consultation between SHPD and the Navy additional information was requested. This included a more detailed description of the undertaking, the overall duration of the proposed training, and justification for how the undertaking is not affecting historic properties identified in the APE.

The Navy asserts the duration of the undertaking for NHPA Section 106 purposes to coincide with the newly enacted 7-year time limit for the Marine Mammal Protection Act letters of authorization. Thus, subject to any exigency, this undertaking shall conclude December 25, 2025.

During a November 14, 2018 meeting between the Navy and SHPD, SHPD staff inquired as to whether training on land was part of the undertaking. The Navy states that as discussed during that meeting and as reflected in their EIS/OEIS proposed action, terrestrial activities are not part of the proposed undertaking under Section 106. However, as the Navy points out, their amphibious landings may result in some degree of military training on land. These land-based training activities are covered by compliance documents provided as Enclosures 2-4 with the Navy's recent letter.

The relationship of these at sea to land activities prompted the SHPO to request the Navy to provide an annual one-page memorandum identifying amphibious landing activity in the preceding calendar year. In cooperation with the SHPO, the Navy will provide an annual summary table by December 31 for each calendar year during the 7-year period comprising this undertaking. This summary table will indicate whether amphibious landing activities occurred at any of the installation locations. It will also report whether any in-water inadvertent discoveries were made during the year and, if so, their location, nature, and treatment.

In the event of a post-review discovery, the Navy shall make reasonable efforts to avoid, minimize or mitigate adverse effects to historic properties in accordance with 36 CFR 800.13. In the event that Native American Graves Protection and Repatriation Act (NAGPRA) cultural items are discovered, all activities in the vicinity will stop, the remains will be stabilized and protected, and treatment shall proceed, as applicable under the authority of NAGPRA and/or HRS Chapter 6E.

The SHPO concurs with the Navy's finding of *no historic properties affected*. The Department of the Navy is the office of record for this undertaking. Please maintain a copy of this letter with your environmental review record for this undertaking.

Please contact Dr. Susan A. Lebo, Archaeology Branch Chief, at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov for matters pertaining to archaeological resources or this letter.

Aloha,
Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Carly R. Antone, NAVFAC PAC, carly.antone@navy.mil

2

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0447
June 11, 2025

Jessica Puff
Administrator, State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building
601 Kamokila Boulevard Room 555
Kapolei, HI 96707

Dear Ms. Puff:

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 CONSULTATION FOR THE PROPOSED HAWAII-CALIFORNIA TRAINING AND TESTING (HICRIS #2024PR01118)

This letter provides notice that the Department of the Navy (Navy) has completed consultation on the subject undertaking with your office in accordance with 36 C.F.R. Part 800, regulations implementing Section 106 of the National Historic Preservation Act.

Consistent with 36 C.F.R. § 800.3, the Navy initiated consultation on the subject undertaking in a letter sent September 16, 2024. Following consultation with Native Hawaiian Organizations (NHOs), and consistent with 36 C.F.R. § 800.4(d)(1), in a letter sent April 16, 2025, the Navy provided your office with documentation of its finding as set forth in 36 C.F.R. § 800.11(d) that there are no historic properties affected. Under 36 C.F.R. § 800.4(d)(1)(i), if the State Historic Preservation Officer does not object within 30 days of receiving a documented finding of no historic properties affected, the agency official's responsibilities under Section 106 are fulfilled. As more than 30 days has passed and the Navy has not received an objection from your office or from other consulting parties, the Navy now considers its Section 106 responsibilities complete for the subject undertaking.

If there are any questions, please contact Dr. Paul Shawn Marceaux, Naval Facilities Engineering Systems Command Pacific, via phone at [redacted] or via e-mail at [redacted]

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

J.8 National Marine Sanctuaries Act

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/0422
May 30, 2025

Ms. Vicki Wedell
NOAA Office of National Marine Sanctuaries
National Permit Coordinator
1305 East-West Highway (N/ORM6)
Silver Spring, MD 20910-3282

Dear Ms. Wedell:

In accordance with Section 304(d) of the National Marine Sanctuaries Act, the United States Navy (Navy) is submitting the enclosed Sanctuary Resource Statement (SRS) to initiate consultation for the proposed Hawaii-California Training and Testing (HCTT) military readiness activities. The proposed action is described in the HCTT Draft Environmental Impact Statement/Overseas Environmental Impact Statement released in December 2024. The Navy is the lead agency, and the U.S. Pacific Fleet is the lead action proponent within the Navy. The U.S. Coast Guard, Army, and Air Force are participating as joint lead agencies. The National Marine Fisheries Service (NMFS) is a cooperating agency and has prepared the SRS jointly with the Navy to support the NMFS Marine Mammal Protection Act regulatory process.

The SRS analyzes potential impacts to sanctuary resources in the following designated and proposed National Marine Sanctuaries: Channel Islands, Chumash Heritage, Cordell Bank, Greater Farallones, Hawaiian Islands Humpback Whale, Monterey Bay, Pacific Islands Heritage (proposed), and Papahānaumokuākea.

The Navy appreciates the support of ONMS in the development of the SRS. If you have any questions, please contact Mr. Alex Stone, U.S. Pacific Fleet, via phone at [redacted] via e-mail at [redacted]

Sincerely,

J. H. BEATTIE
Captain, U.S. Navy
Deputy Fleet Civil Engineer
By direction

Enclosure: Sanctuary Resource Statement for the U.S. Navy's Hawaii-California Training and Testing (HCTT) Activities

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of National Marine Sanctuaries
Pacific Islands Regional Office
1845 Wasp Blvd
Honolulu, HI 96818

July 31, 2025

CAPT J.H. Beattie
Department of the Navy
U.S. Pacific Fleet, Deputy Fleet Civil Engineer
1050 Makalapa Drive
Pearl Harbor, Hawaii 96860

Mr. Ben Laws
NOAA National Marine Fisheries Service
Office of Protected Resources, Incidental Take Program Supervisor
1315 East West Highway
Silver Spring, Maryland 20910

Dear Captain Beattie and Mr. Laws:

On June 3, 2025, the National Oceanic and Atmospheric Administration (NOAA) Office of National Marine Sanctuaries (ONMS) received the U.S. Department of the Navy and NOAA National Marine Fisheries Service (NMFS) Sanctuary Resource Statement (SRS) and request to initiate consultation under section 304(d) of the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1434(d)) for Hawaii California Fleet Testing and Training (HCTT) Phase IV activities occurring within the Pacific Ocean conducted by the Action Proponents. As described in the SRS, "Action Proponents" include the Navy (including the U.S. Navy and the U.S. Marine Corps, Naval Air Systems Command, Naval Sea Systems Command, Naval Information Warfare Systems Command, and Office of Naval Research), the U.S. Coast Guard, U.S. Army, and U.S. Air Force. The testing and training activities analyzed therein comprise of the Proposed Action as described in the HCTT Draft Environmental Impact Statement/Draft Overseas Environmental Impact Statement published in December 2024. The NMFS proposed action is the issuance of Incidental Take Regulations and multiple associated Letters of Authorizations pursuant to the Marine Mammal Protection Act for the authorization of take of marine marine mammals incidental to the Action Proponents' training and testing activities in the HCTT Study Area over the course of seven years from December 2025 through December 2032 (90 CFR 32118; July 16, 2025).

Pursuant to section 304(d) of the NMSA, ONMS conducted a review of the HCTT Phase IV SRS as well as the recently published NMFS' notice of proposed rulemaking (NPRM). After review of both, there appears to be some differences in the estimates for marine mammal mortalities for certain sanctuaries for certain testing or training activities. ONMS will work with NMFS and Navy to ensure that ONMS injury determination and recommended alternatives pursuant to NMSA 304(d) reflect the marine mammals

authorized for take. ONMS finds that the SRS and the NPRM are sufficient for Channel Islands, Chumash Heritage, Cordell Bank, Greater Farallones, Hawaiian Islands Humpback Whale, Monterey Bay, and Papahānaumokuākea national marine sanctuaries for the purposes of making an injury determination and developing recommended alternatives.

The next step in the consultation process is for ONMS to evaluate whether sanctuary resources are likely to be injured by the proposed action and, if so, to develop any reasonable and prudent alternatives to further protect sanctuary resources. ONMS will complete this work within 45 days of the date of this letter, and no later than September 14, 2025, unless another date is agreed to.

The SRS acknowledges that HCTT Phase IV Proposed Action would be conducted in the vicinity of the proposed Pacific Islands Heritage National Marine Sanctuary. However in the SRS, the Navy and NMFS determined that there is no potential for the Proposed Action to result in injury to sanctuary resources of the proposed Pacific Islands Heritage NMS, and have discounted it from this NMSA section 304(d) consultation. Should NOAA publish a final rule designating the new sanctuary, we encourage Navy and NMFS to rely on this preliminary analysis in the 2025 SRS to the extent it remains accurate, along with any new information that is necessary for the agencies to assess the likelihood of ongoing HCTT activities to injure sanctuary resources.

ONMS appreciates the collaboration with the Navy in the development of the SRS. If you have any questions, please contact Vicki Wedell, National Resource Protection Coordinator, via phone at [redacted] or via email at [redacted].

Sincerely,

Kristina Kekuewa, Regional Director

CC: Alexander Stone, Department of Navy, U.S. Pacific Fleet
Leah Davis, NOAA National Marine Fisheries Service,
Office of Protected Resources

2

Appendix K Geographic Mitigation Assessment

Environmental Impact Statement/
Overseas Environmental Impact Statement
Hawaii-California Training and Testing

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APPENDIX K GEOGRAPHIC MITIGATION ASSESSMENT

K.1 INTRODUCTION

The Action Proponents have been mitigating effects from their training and testing activities for more than two decades using a combination of activity-based mitigation (activity-based mitigation was referred to as "Procedural Mitigation" in the 2018 Hawaii-Southern California Training and Testing [HSTT] and 2022 Point Mugu Sea Range [PMSR] Environmental Impact Statement/Overseas Environmental Impact Statements [EIS/OEISs]) and geographic mitigation. Current activity-based mitigation measures (which apply throughout the Study Area) and geographic mitigation measures that apply to specific areas are reflected in the December 18, 2018, Record of Decision (ROD) for the HSTT EIS/OEIS.

All mitigation measures (activity-based and geographic) presented in this EIS/OEIS apply to both Alternative 1 and Alternative 2 and would be implemented as part of the Proposed Action, as discussed in Chapter 2 (Description of the Proposed Action and Alternatives). These mitigation measures are considered in the Chapter 3 (Affected Environment and Environmental Consequences) environmental analyses for each relevant biological resource and are discussed in detail in Chapter 5 (Mitigation).

Activity-based mitigation measures are tailored to specific training and testing activities and are implemented whenever and wherever those activities take place within the Study Area. The Action Proponents'[1] methods for developing activity-based mitigation measures for each specific activity are detailed in Chapter 5 (Mitigation) of the 2018 HSTT EIS/OEIS.

In addition to activity-based mitigation measures, the Navy implements specific mitigation measures in designated geographic locations within the Study Area, referred to as "mitigation areas." This appendix demonstrates the Navy's thorough consideration of specific mitigation areas during the planning process. This appendix contains background information and lays out the methodology used by the Navy in its scientific and operational analysis for assessing and developing proposed mitigation areas within the Hawaii-California Training and Testing (HCTT) Study Area to further avoid or reduce potential effects on marine mammals in key areas of biological importance.

For the purposes of this assessment, the term "geographic mitigation" means mitigation, beyond the activity-based mitigation described above, that has been tailored to geographic locations (mitigation areas), designed to benefit particular species and stocks of marine mammals, and which can include provisions to apply measures either year-round or seasonally, depending on the unique characteristics of the area. When committed to, for a particular species, such mitigation measures can also serve to provide benefits to other marine species, such as sea turtles, fish, corals, or other marine mammals. The mitigation areas assessed in this appendix are described in Section K.1.1 (Mitigation Areas Analyzed). Information on the approach to analysis is contained in Section K.2.1 (Approach to Analysis). The mitigation area assessments are presented in Sections K.3 (Biologically Important Areas Within the Hawaii Study Area) and K.4 (Biologically Important Areas Within the California Study Area).

[1] The Action Proponents include the U.S. Department of the Navy (Navy) (including both the U.S. Navy and the U.S. Marine Corps [USMC]) jointly with the U.S. Coast Guard (USCG), U.S. Army (Army), and U.S. Air Force (USAF). The Navy is the lead agency.

All final activity-based mitigation measures and geographic mitigation measures are coordinated with the National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS), as appropriate, through the consultation and permitting process and will be documented and committed to in the Action Proponents' and NMFS RODs, NMFS Marine Mammal Protection Act (MMPA) Final Rule and Letters of Authorization (LOA), and the Endangered Species Act (ESA) Biological Opinions.

K.1.1 MITIGATION AREAS ANALYZED

K.1.1.1 Biologically Important Areas

In 2011, the Cetacean Density and Distribution Mapping Working Group identified and categorized areas of importance for cetaceans. Areas identified through this process were termed "Biologically Important Areas" (BIAs) (Ferguson et al., 2015b; Van Parijs, 2015). The BIAs located in the main Hawaiian Islands (Kratofil et al., 2023), and off California (Calambokidis et al., 2024), have since been reviewed and revised based on new data and information collected since the original BIAs were defined based on how species use these areas. The original BIAs defined by Ferguson et al. (2015b) and Van Parijs et al. (2015), and those recently revised (Calambokidis et al., 2024; Kratofil et al., 2023), are defined as biologically important for a particular species or stock and for an associated behavior exhibited by the species in that area. The four types of BIAs are reproductive, feeding, migratory, and small and resident, as described below (Harrison et al., 2023).

- Reproductive Areas – Areas and times within which a particular species selectively mates, gives birth, or are found with neonates or calves.
- Feeding Areas – Areas and times within which aggregations of a particular species preferentially feed. These either may be persistent in space and time or associated with ephemeral features that are less predictable but are located within a larger area that can be delineated.
- Migratory Corridors – Areas and times within which a substantial portion of a species is known to migrate; the corridor is spatially restricted.
- Small and Resident Population – Areas and times within which small and resident populations occupy a limited geographic extent. (Note: for this category, the Cetacean Density and Distribution Mapping Working Group delineated biologically important areas for "populations or stocks whose range spans only a bay, an area around one or several islands, or a portion of what the Cetacean Density and Distribution Mapping Working Group define as a region. Each regional chapter provides an explicit definition of 'resident' for each small and resident biologically important area delineated").

BIAs are also delineated for a specific time during which the important behavior is occurring in the area (e.g., while the species is migrating through the area). However, BIAs are not regulatorily mandated exclusionary zones (closure areas) and are not analogous to marine protected areas or critical habitat under the ESA, but rather were identified as resource management tools to "aid the National Oceanic and Atmospheric Administration and other federal agencies in… analyses and planning as required under multiple U.S. statutes," such as the National Environmental Policy Act (NEPA), MMPA, and ESA, "to characterize and minimize the impacts of anthropogenic activities on cetaceans and to achieve conservation and protection goals" (Ferguson et al., 2015b).

Although NMFS considers each area's boundary to be dynamic and subject to change based on new information (Ferguson et al., 2015a), the Action Proponents' assessments in this appendix are based on the areas as they were originally described in 2015 and recently revised in Calambokidis et al. (2024) and

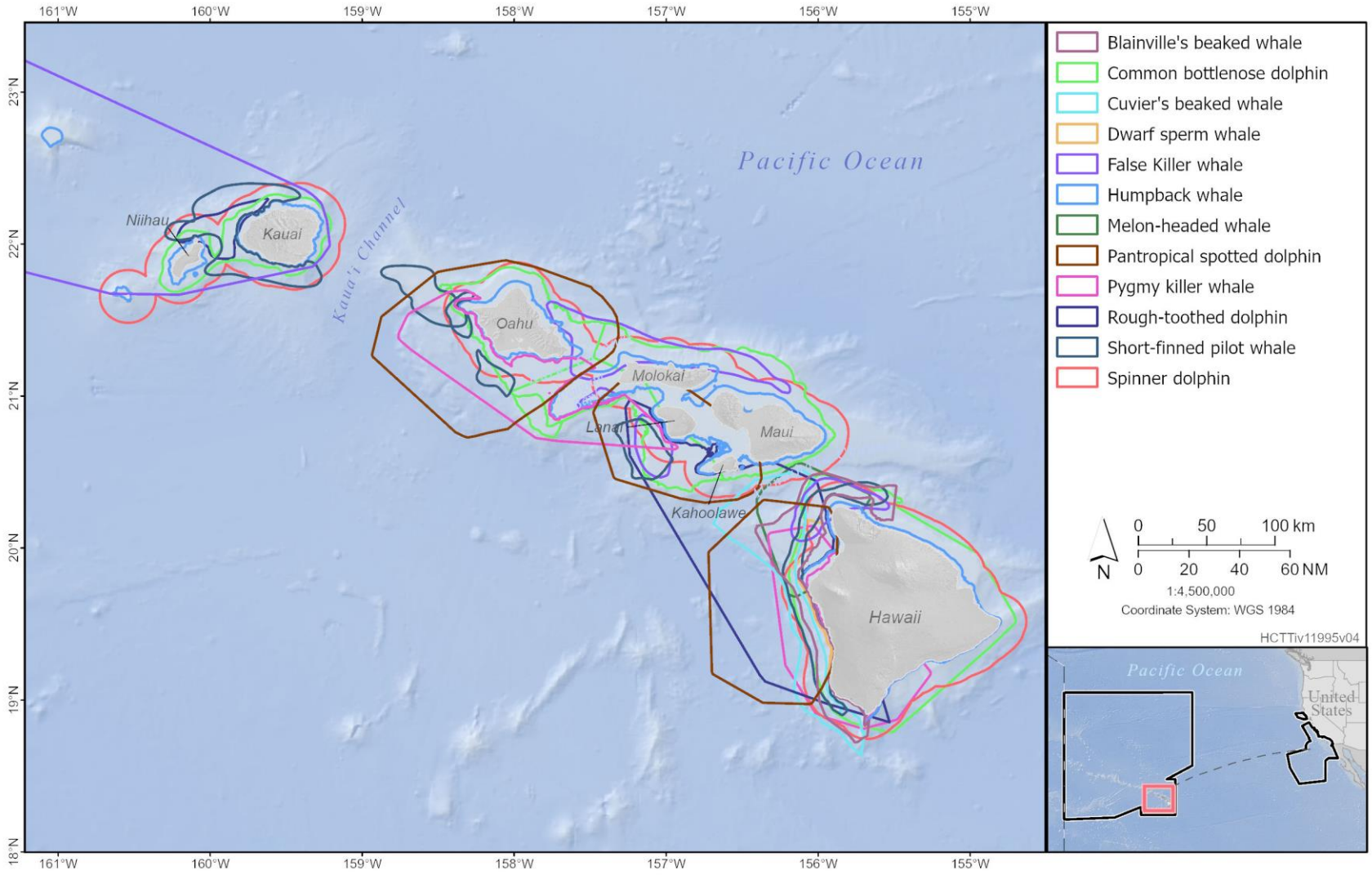
Kratofil et al. (2023). As new data become available, the Action Proponents and NMFS will continue to reassess the data via the adaptive management process discussed in Section 5.5 (Monitoring, Research, and Adaptive Management) of Chapter 5 (Mitigation) of this EIS/OEIS.

Two new aspects of the BIA II delineation protocol are the options for identifying transboundary BIAs and "hierarchical" BIAs. Transboundary BIAs are BIAs that span more than one of the seven BIA regions (East Coast of the U.S., Gulf of Mexico, West Coast of the U.S., Hawaii, Gulf of Alaska, Aleutian islands and Bering Sea, and Arctic), and thus allow for continuity in a species' important area among BIA regions if necessary (e.g., for migration corridors). Delineated BIA boundaries can extend into international waters if supporting data is available (i.e., BIAs were not truncated at the U.S. Exclusive Economic Zone (EEZ), but BIAs were not identified solely within international waters (Harrison et al., 2023). Hierarchical BIAs are for situations where high-resolution data are available and it is appropriate and helpful to identify a gradation in animal use, available information, certainty in the spatial and/or temporal aspects of the boundary, or ecological characteristics across a broader area. For many species considered here, data were available to support the existence of core areas of use, or areas used notably more intensely, identified within a larger important area, which is termed "parent BIA" (Harrison et al., 2023) or "child BIA in Kratofil et al. (2023). In these cases and throughout this manuscript, these areas are referred to as "core BIAs" to more clearly represent that these areas were identified as a portion of the parent BIA with intensified use (e.g., higher density) by the given species and corresponding higher intensity scores based on the criteria evaluated. One exception to this was the delineation of the hierarchical migration BIA for (primarily) Eastern North Pacific gray whales, where one parent BIA temporally and spatially spans both northbound and southbound migrations, with a transboundary extension to the Gulf of Alaska. The parent BIA encompasses several smaller (spatially) and shorter (temporally) phase-specific BIAs (i.e., southbound, northbound phase for adults/juveniles, northbound phase for cow/calf pairs). In this situation, such nested BIAs are referred to as "child BIAs".

As discussed in Section C.6.1.2 (Habitat Use) of Appendix C (Biological Resources Supplemental Information) of this EIS/OEIS, 35 BIAs were identified in Hawaii for 12 cetacean species (*Note: Discrete maps of the individual areas are presented in the following subsections where those areas are discussed for each species*

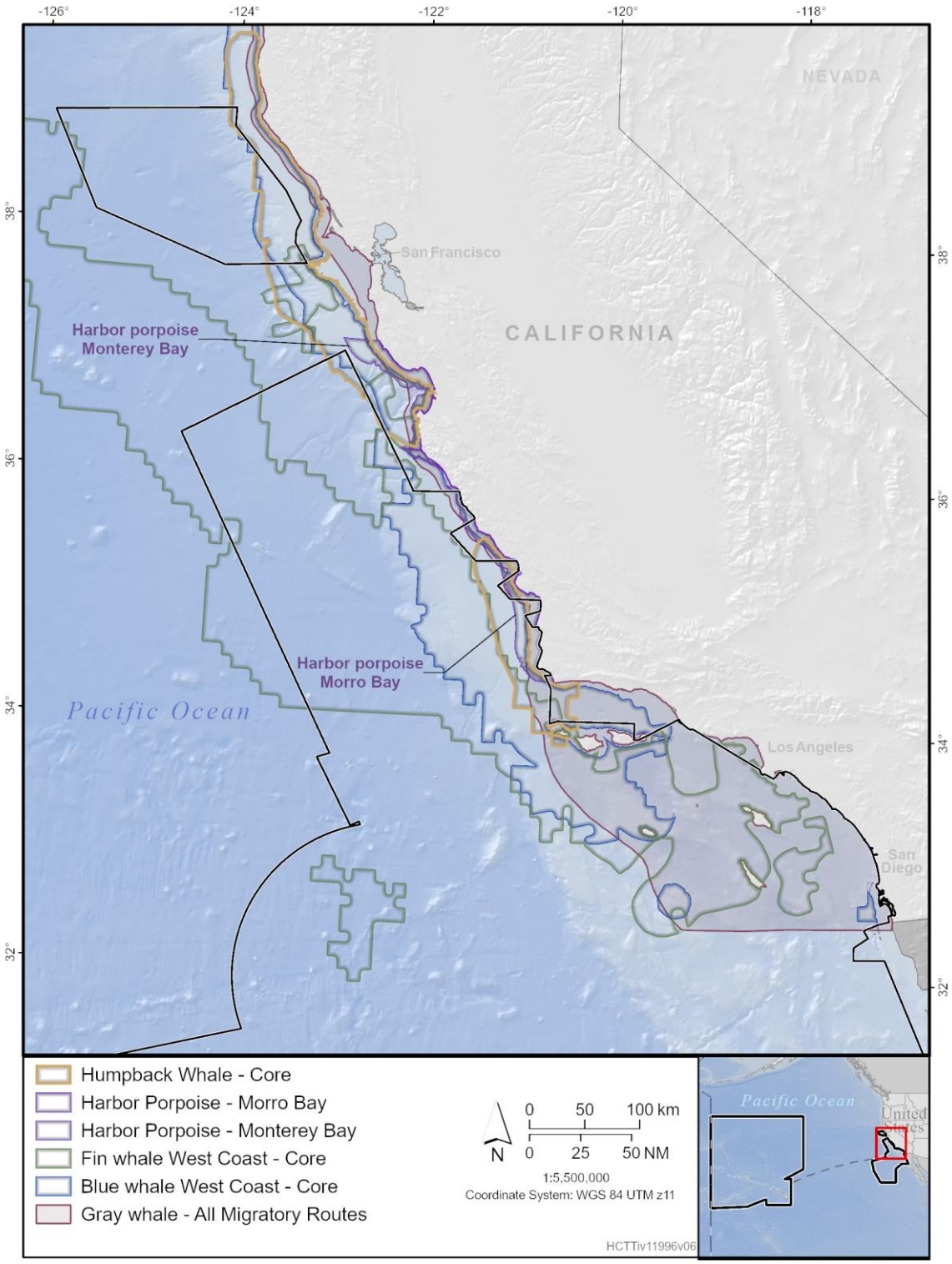
Figure K-1); these included 33 small resident BIAs for 11 odontocetes and 2 reproductive BIAs for humpback whales in the main Hawaiian Islands (Kratofil et al., 2023). Hierarchical BIAs were defined for 9 of the 12 species yielding between 1 and 3 child BIAs for each of the 9 parent BIAs, depending on the species. Ten non-hierarchical BIAs were defined for 6 species.

Twenty-eight BIAs were identified for four species off the U.S. West Coast in 2015 (Calambokidis et al., 2015b), with 5 of those areas located within or overlapping the California portion of the 2018 HSTT Study Area. The BIAs included 4 feeding areas for blue whales and a migration area for gray whales (Calambokidis et al., 2015b). NMFS recently updated the BIAs for cetaceans on the U.S. West Coast (Figure K-2) resulting in BIAs for two additional species, fin whales and Southern Resident killer whales that were not delineated in the original effort in 2015 (Calambokidis et al., 2024).



Note: Discrete maps of the individual areas are presented in the following subsections where those areas are discussed for each species

Figure K-1: Biologically Important Areas in the Hawaii Study Area



Note: Discrete maps of the individual areas are presented in the following subsections where those areas are discussed for each species.

Figure K-2: Biologically Important Areas in the California Study Area

For this assessment, the Action Proponents used the revisions to the Cetacean Density and Distribution Mapping Working Group source literature (Calambokidis et al., 2024; Kratofil et al., 2023) in combination with Navy marine species monitoring reports, available tagging data, and the most up-to-date scientific literature, to assess the potential likelihood that additional mitigation in these areas would be warranted. In many instances, data from the Navy's marine mammal tagging studies were particularly helpful in providing context about the full extent of habitats used by cetaceans for biologically important behaviors in the Study Area, since oftentimes the biologically important areas identified in Calambokidis et al. (2024) and Kratofil et al. (2023) represent only a portion of the habitats used by marine mammals throughout their range.

K.1.1.2 Areas Suggested During the Public Involvement Process

In addition to the revised BIAs discussed in Section K.1.1.1 (Biologically Important Areas), the Action Proponents received comments during the scoping and draft document public involvement processes for the HCTT EIS/OEIS suggesting that the Navy consider additional areas for mitigation.

The areas recommended during the scoping and HCTT Draft EIS/OEIS public comment period include the following locations in the HCTT Study Area and are analyzed within this appendix:

1. Papahanaumokuakea National Marine Sanctuary (NMS), located in the Hawaii Study Area. The scoping comment suggested that the activity-based mitigation zones that the Action Proponents propose to employ regarding marine species protection be extended to Papahanaumokuakea NMS to safeguard the marine species and cultural and environmental resources therein.
2. Cross Seamount, located in the Hawaii Study Area. The HCTT Draft EIS/OEIS public comment suggested that the Navy designate a year-round mitigation area to protect the seamount. The comment also suggested that the Navy consider habitat-based management measures for other nearby seamounts.
3. Areas off Oʻahu, Kauaʻi, and Niʻihau in the Hawaii Study Area. The HCTT Draft EIS/OEIS public comment suggested that the Navy should further consider the implementation of mitigation areas off Oʻahu, Kauaʻi, and Niʻihau.
4. The core small and resident BIA areas off Oahu, Lanai, and Molokai in the Hawaii 4-Islands Mitigation Area, which prohibits use of MF1 and MF1C hull-mounted surface ship sonar from November 15 to April 15 and in-water explosives year round.
5. San Nicolas Island Mitigation Area in the California Study Area.

K.1.1.2.1 Additional Mitigation Measures Suggested during the Draft EIS/OEIS Public Involvement Process

In addition to the areas suggested above in Section K.1.1.2 (Areas Suggested During the Public Involvement Process), the Action Proponents received comments during the HCTT Draft EIS/OEIS public involvement process suggesting the Action Proponents implement additional mitigation measures that limit or restrict activities within areas that the Action Proponents have proposed for mitigation.

The Action Proponents have taken into account these public comments received on the HCTT Draft EIS/OEIS, as well as best available science and the feasibility of implementing additional mitigation measures to further reduce impacts on marine mammals. Revisions to the mitigation areas are presented in Section K.6 (Mitigation Areas to be Implemented). The following is a list of mitigation measures suggested during the public involvement process based on the mitigation areas proposed in the HCTT Draft EIS/OEIS:

HCTT Study Area

- Imposing a 10-knot ship speed limit in whale mitigation areas to reduce the risk of vessel strikes.
- Avoiding testing and training exercises in key migration corridors and prime feeding areas.
- Avoiding testing and training exercises in areas where the whale presence in the area is "High" or "Very High," per WhaleSafe.

California Study Area

- Extend the seasonality of the Southern California Blue Whale Mitigation Area to April 1 to December 31.
- Limit all sources of mid-frequency active sonar in the Southern California Blue Whale Mitigation Area.
- Require vessel speed restrictions the Southern California Blue Whale Mitigation Area.
- Extend the seasonality of the Central California Large Whale Mitigation Area to April 1 to December 31.
- Prohibit use of air-deployed mid-frequency active sonar in the Central California Large Whale Mitigation Area.
- Restrict other sources of mid-frequency active sonar in the Central California Large Whale Mitigation Area.
- Prohibit use of low-frequency active sonar in the Central California Large Whale Mitigation Area.
- Prohibit the use of in-water explosives in the Central California Large Whale Mitigation Area.
- Require vessel speed restrictions in the Central California Large Whale Mitigation Area.
- Enhance mitigation measures for the Northern California Large Whale Mitigation Area to align with those proposed for the Central California Large Whale Mitigation Area.
- Use the most recent data possible for predicting concentrations of blue, fin, and humpback whales in the California Large Whale Awareness Mitigation Area.
- Issue awareness notifications during times of year that gray whales and fin whales are most likely to be present at their greatest densities in the California Study Area.
- Issue real-time notifications when one or more large whales are observed within 1 nautical mile (NM) of a Navy vessel, and extend notifications to USCG vessels performing or supporting Navy-related activities in the California Study Area.
- Maintain mitigation for the core feeding biologically important area for blue whales in the San Nicolas Island Mitigation Area.
- Prohibit sonar and explosives in all the whale mitigation areas off California from June through November.
- Use both visual and passive acoustic monitoring platforms to detect whales and trigger awareness notification systems in the California Large Whale Real-Time Notification Mitigation Area.
- Require dynamic speed reductions to 10 knots upon receipt of a real-time notification, when practicable in the California Large Whale Real-Time Notification Mitigation Area.
- Limit the number of sonar hours combined to no more than 300 hours of MF1 hull-mounted surface ship sonar combined for the San Nicolas Island Mitigation Area, the Southern California Blue Whale, the Central California Large Whale, and Northern California Large Whale Mitigation Areas from June 1 through November 30, and prohibit explosives (i.e., mine warfare, large-

caliber gunnery rounds, torpedoes, bombs, and missiles) from June 1 through November 30 in these areas.

Hawaii Study Area

- Limit major training exercises to reduce cumulative exposure in the Hawaii Islands Marine Mammal Mitigation Area.
- Extend the boundaries of the Hawai‘i 4-Islands Marine Mammal Mitigation Area to encompass child Strategic BIAs (S-BIAs) for endangered Main Hawaiian Island (MHI) insular false killer whales.
- Extend the prohibition of the use of MF1 surface ship hull-mounted mid-frequency active sonar, and other sources of mid-frequency active sonars, in the Hawai‘i 4-Islands Marine Mammal Mitigation Area, from December 1 through May 31.
- Prohibit use of air-deployed mid-frequency active sonar year-round in the Hawai‘i 4-Islands Marine Mammal Mitigation Area.
- Prohibit use of low-frequency active sonar between December 1 and May 31 in the Hawai‘i 4-Islands Marine Mammal Mitigation Area.
- Require vessel speed restrictions between December 1 and May 31 in the Hawai‘i 4-Islands Marine Mammal Mitigation Area.
- Extend the reporting period from December 1 through May 31 in the Hawai‘i Humpback Whale Special Reporting Mitigation Area.
- Report other sources of mid-frequency and low-frequency active sonar in the Hawai‘i Humpback Whale Special Reporting Mitigation Area.
- Issue awareness notifications during times of year that humpback whales are most likely to be present at their greatest densities in the Hawai‘i Humpback Whale Awareness Notification Mitigation Area.

K.1.1.3 Mitigation Areas Currently Implemented

During the 2018 HSTT EIS/OEIS (Phase III), seafloor resource mitigation areas (Table K-1, Figure K-3, and Figure K-4), as well as seven geographic mitigation areas (four in the Hawaii [Table K-2 and *Notes: HSTT = Hawaii-Southern California Training and Testing*

Figure K-5] and three in the Southern California [Table K-3 and *Notes: MCAS = Marine Corps Air Station; MCB = Marine Corps Base; NWS = Naval Weapons Station*

Figure K-6] portions of the HSTT Study Area) were and continue to be implemented. In addition, the California Large Whale Real-Time Notification Mitigation Area (Table K-4) from the HSTT Biological Opinion reinitiation is currently being implemented.

The Northern California (NOCAL) Range Complex and the PMSR were not part of the HSTT Study Area and therefore no mitigation areas were implemented for those areas during Phase III. In addition, there was no geographic mitigation incorporated into the 2022 PMSR EIS/OEIS.

K.1.1.3.1 Mitigation Areas for Seafloor Resources

As outlined in Table K-1 and shown in Figure K-3 and Figure K-4, the Navy is currently implementing mitigation from Phase III to avoid or reduce potential effects on biological or cultural resources that are not observable by lookouts from the water’s surface (i.e., resources for which activity-based mitigation measures cannot be implemented).

Table K-1: Phase III Mitigation Areas for Seafloor Resources in the Study Area

Mitigation Area Description
Stressor or Activity • Explosives • Physical disturbance and strikes
Resource Protection Focus • Shallow-water coral reefs • Precious coral beds • Live hard bottom • Artificial reefs • Shipwrecks
Mitigation Area Requirements (year-round) • **Within the anchor swing circle of shallow-water coral reefs, precious coral beds, live hard bottom, artificial reefs, and shipwrecks:** – The Navy will not conduct precision anchoring (except in designated anchorages in the Hawaii Range Complex and California Study Area, such as areas adjoining the boat lanes off Silver Strand Training Complex and Naval Amphibious Base Coronado). • **Within a 350 yd. radius of live hard bottom, artificial reefs, and shipwrecks:** – The Navy will not conduct explosive mine countermeasure and neutralization activities or explosive mine neutralization activities involving Navy divers (except in designated areas in the Hawaii Range Complex and California Study Area, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practicable). – The Navy will not place mine shapes, anchors, or mooring devices on the seafloor (except in designated areas in the Hawaii Range Complex and California Study Area, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practicable). • **Within a 350 yd. radius of shallow-water coral reefs and precious coral beds:** – The Navy will not conduct explosive or non-explosive small-, medium-, and large-caliber gunnery activities using a surface target; explosive or non-explosive missile and rocket activities using a surface target; explosive or non-explosive bombing and mine laying activities; explosive or non-explosive mine countermeasure and neutralization activities; and explosive or non-explosive mine neutralization activities involving Navy divers (except in designated areas in the Hawaii Range Complex and California Study Area, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practicable). – The Navy will not place mine shapes, anchors, or mooring devices on the seafloor (except in designated areas in the Hawaii Range Complex and California Study Area, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practicable).

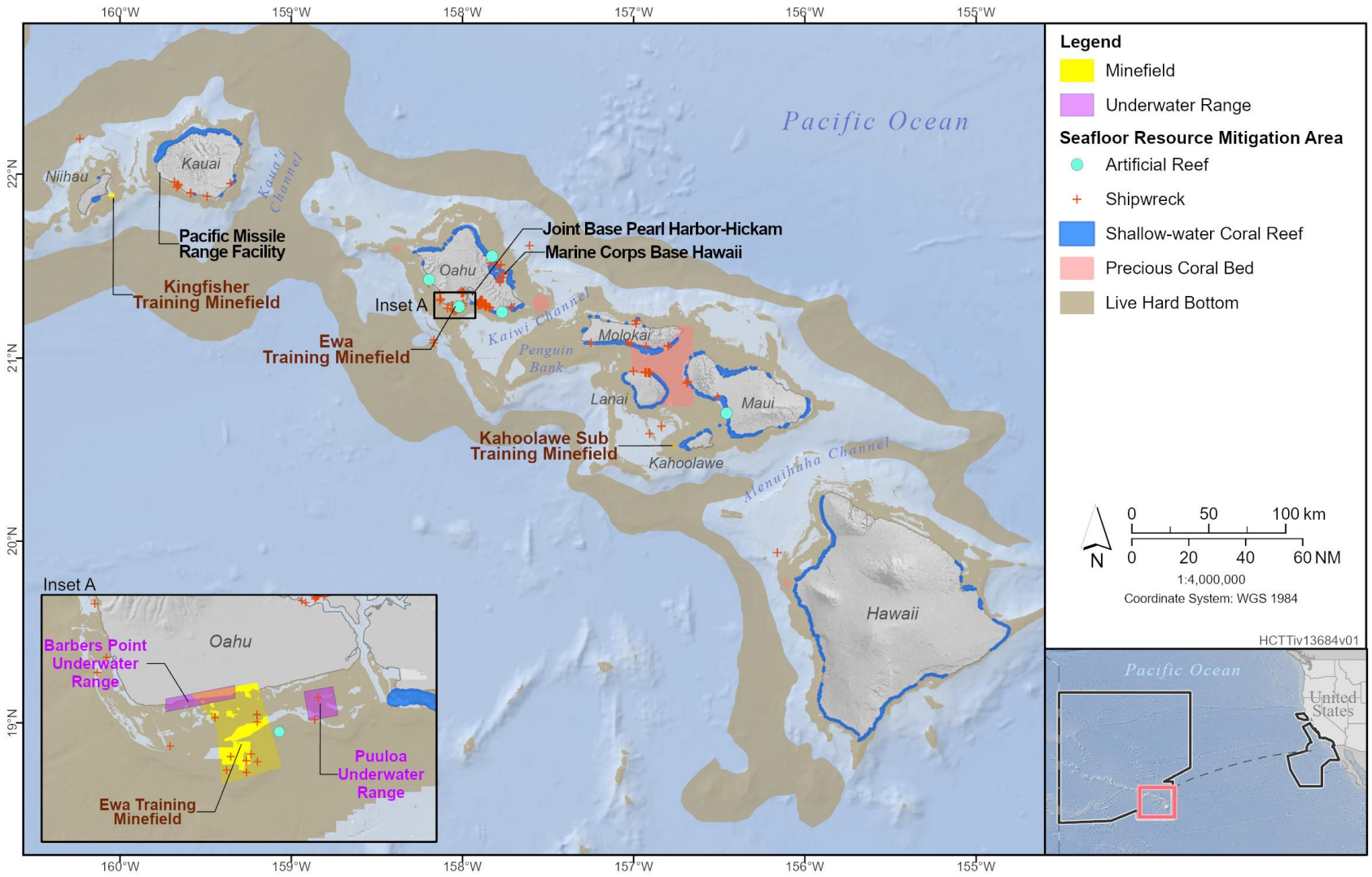
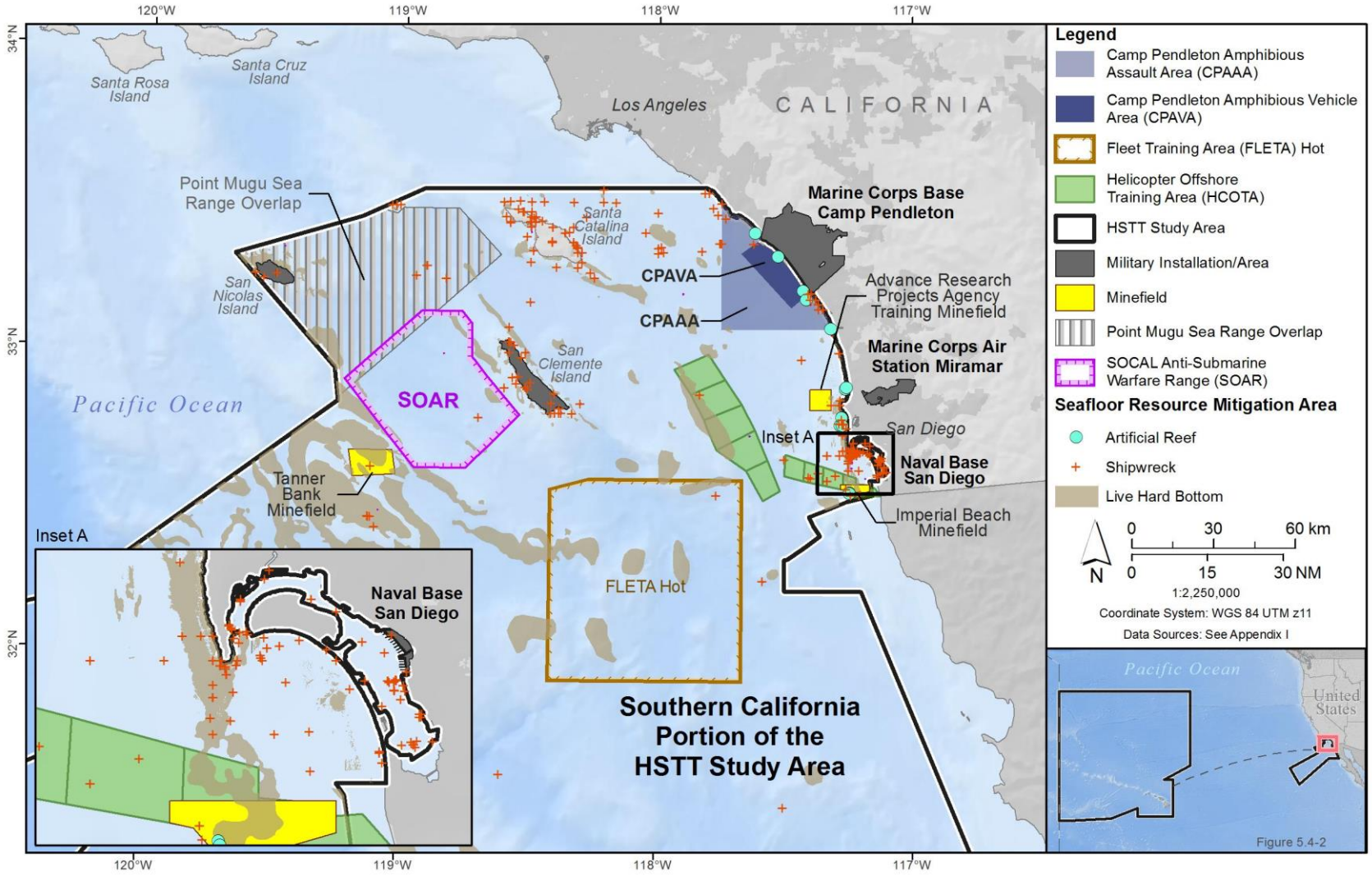


Figure K-3: Phase III Seafloor Resource Mitigation Areas off the Hawaiian Islands



Notes: HSTT = Hawaii-Southern California Training and Testing; MCAS = Marine Corps Air Station; MCB = Marine Corps Base; NB = Naval Base; SOCAL = Southern California

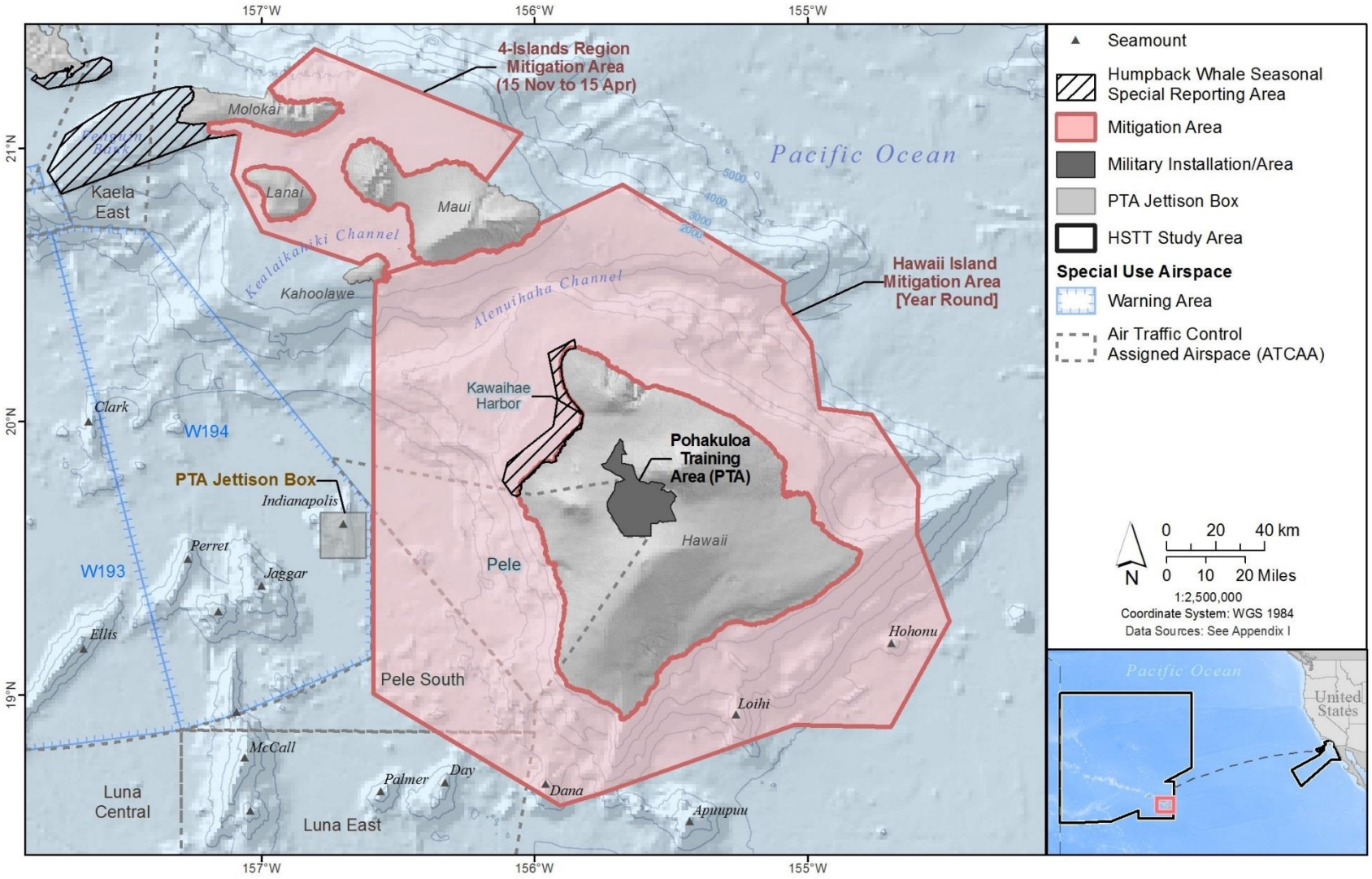
Figure K-4: Phase III Seafloor Resource Mitigation Areas off Southern California

K.1.1.3.2 Mitigation Areas for Marine Mammals in the Hawaii Study Area

As described in Table K-2 and shown in Figure K-5, the Navy is currently implementing mitigation areas from Phase III in the Hawaii Study Area to, in combination with activity-based mitigation measures, effect the least practicable adverse impact on marine mammal species or stocks and their habitat and to provide additional mitigation for Endangered Species Act (ESA)-listed marine mammal species.

Table K-2: Phase III Mitigation Areas for Marine Mammals in the Hawaii Study Area

Mitigation Area Description
Stressor or Activity • Sonar • Explosives • Vessel strikes
Resource Protection Focus • Marine mammals
Mitigation Area Requirements • **Hawaii Island Marine Mammal Mitigation Area (year-round):** – The Navy will not conduct more than 300 hours of MF1 surface ship hull-mounted mid-frequency active sonar or 20 hours of mid frequency dipping sonar, or use explosives that could potentially result in takes of marine mammals during training and testing. Should national security present a requirement to conduct more than 300 hours of MF1 surface ship hull-mounted mid-frequency active sonar or 20 hours of MF4 dipping sonar, or use explosives that could potentially result in the take of marine mammals during training or testing, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., sonar hours or explosives usage) in its annual activity reports submitted to NMFS. • **4-Islands Region Mitigation Area (November 15–April 15 for active sonar; year-round for explosives):** – The Navy will not use MF1 surface ship hull-mounted mid-frequency active sonar or explosives that could potentially result in takes of marine mammals during training and testing. Should national security present a requirement to use MF1 surface ship hull-mounted mid-frequency active sonar or explosives that could potentially result in the take of marine mammals during training or testing, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., sonar hours or explosives usage) in its annual activity reports submitted to NMFS. • **Humpback Whale Special Reporting Areas (December 15–April 15):** – The Navy will report the total hours of surface ship hull-mounted mid-frequency active sonar used in the special reporting areas in its annual training and testing activity reports submitted to NMFS. • **Humpback Whale Awareness Notification Message Area (November–April):** – The Navy will issue a seasonal awareness notification message to alert ships and aircraft operating in the area to the possible presence of concentrations of large whales, including humpback whales. – To maintain safety of navigation and to avoid interactions with large whales during transits, the Navy will instruct vessels to remain vigilant to the presence of large whale species (including humpback whales), that when concentrated seasonally, may become vulnerable to vessel strikes. – Platforms will use the information from the awareness notification message to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of activity-based mitigation measures.



Notes: HSTT = Hawaii-Southern California Training and Testing

Figure K-5: Phase III Marine Mammal Mitigation Areas off the Hawaiian Islands

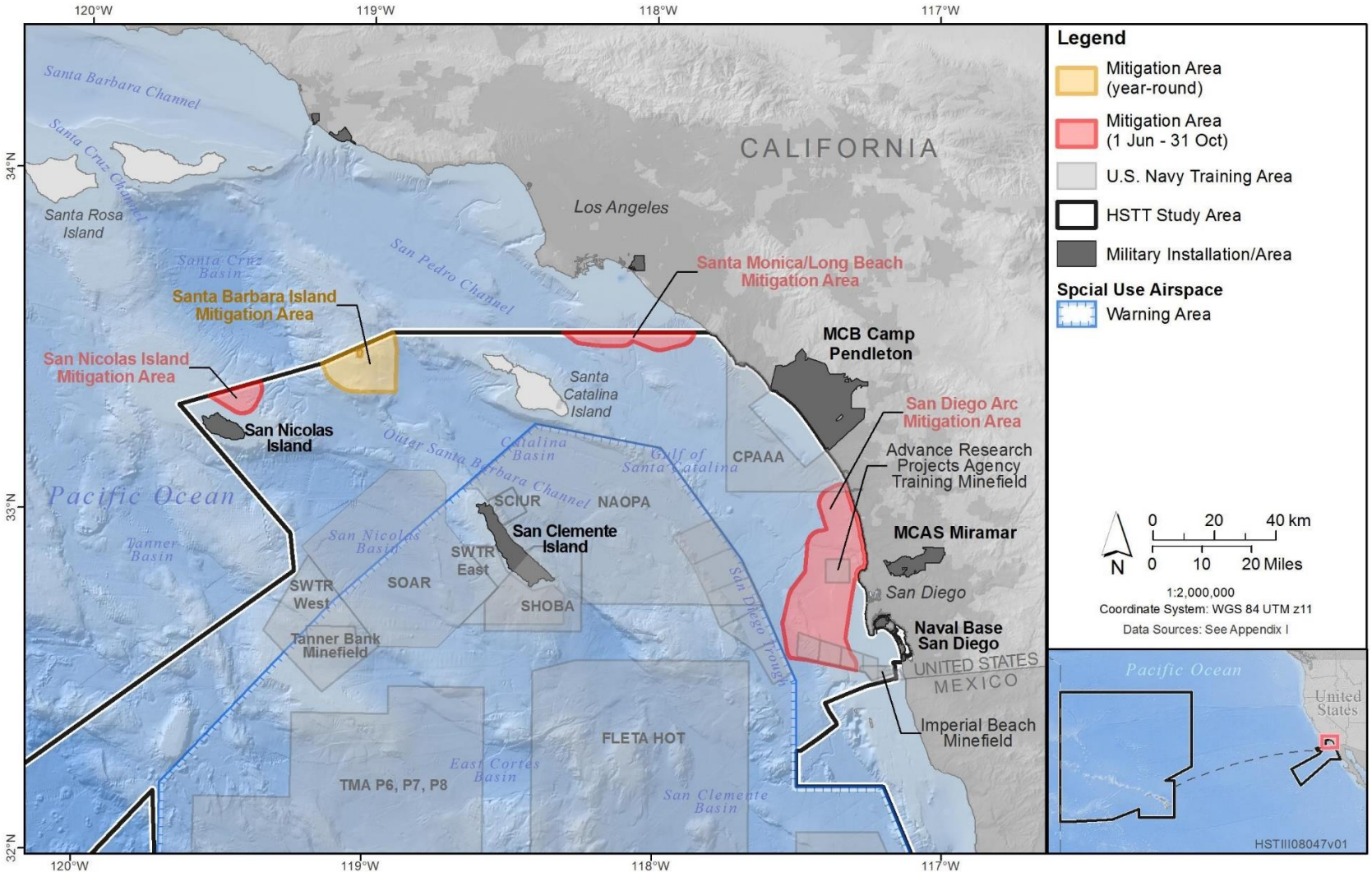
K.1.1.3.3 Mitigation Areas for Marine Mammals in the California Study Area

As described in Table K-3 and Figure K-6, the Navy is currently implementing mitigation areas from Phase III in the California Study Area to, in combination with activity-based mitigation measures, effect the least practicable adverse impact on marine mammal species or stocks and their habitat and to provide additional mitigation for ESA-listed marine mammal species.

Table K-3: Phase III Mitigation Areas in the California Study Area

Mitigation Area Description
Stressor or Activity • Sonar • Explosives • Vessel strikes
Resource Protection Focus • Marine mammals
Mitigation Area Requirements • **San Diego Arc, San Nicolas Island, and Santa Monica/Long Beach Mitigation Areas (June 1 – October 31):** – The Navy will not conduct more than a total of 200 hours of MF1 surface ship hull-mounted mid-frequency active sonar in the combined areas, excluding normal maintenance and systems checks, during training and testing. Should national security present a requirement to conduct more than 200 hours of MF1 surface ship hull-mounted mid-frequency active sonar in the combined areas during training and testing (excluding normal maintenance and systems checks), naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., sonar hours) in its annual activity reports submitted to NMFS. – Within the San Diego Arc Mitigation Area, the Navy will not use explosives that could potentially result in the take of marine mammals during large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training and testing. Should national security present a requirement to use explosives that could potentially result in the take of marine mammals during large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training or testing, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., explosives usage) in its annual activity reports submitted to NMFS. – Within the San Nicolas Island Mitigation Area, the Navy will not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training. Should national security present a requirement to use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., explosives usage) in its annual activity reports submitted to NMFS. – Within the Santa Monica/Long Beach Mitigation Area, the Navy will not use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training and testing. Should national security present a requirement to use explosives that could potentially result in the take of marine mammals during mine warfare, large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training or testing, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., explosives usage) in its annual activity reports submitted to NMFS. • **Santa Barbara Island Mitigation Area (year-round):** – The Navy will not use MF1 surface ship hull-mounted mid-frequency active sonar during training or testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training. Should national security present a requirement to use MF1 surface ship hull-mounted mid-frequency active sonar during training or testing, or explosives that could potentially result in the take of marine mammals during medium-caliber or large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) activities during training, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include the information (e.g., sonar hours or explosives usage) in its annual activity reports submitted to NMFS.

Mitigation Area Description
• **Blue Whale (June – October), Gray Whale (November – March), and Fin Whale (November – May) Awareness Notification Message Areas:** – The Navy will issue a seasonal awareness notification message to alert ships and aircraft operating in the area to the possible presence of concentrations of large whales, including blue, gray, or fin whales. – To maintain safety of navigation and to avoid interactions with large whales during transits, the Navy will instruct vessels to remain vigilant to the presence of large whale species, that when concentrated seasonally, may become vulnerable to vessel strikes. Platforms will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of activity-based mitigation measures.



Notes: MCAS = Marine Corps Air Station; MCB = Marine Corps Base; NWS = Naval Weapons Station

Figure K-6: Phase III Marine Mammal Mitigation Areas off Southern California

K.1.1.3.4 California Large Whale Real-Time Notification Mitigation Area

Table K-4 details real-time notification requirements for a designated area within the SOCAL Range Complex. The mitigation is a continuation from National Marine Fisheries Service (2024).

Table K-4: California Large Whale Real-Time Notification Mitigation Area

Category	Mitigation Requirements	Mitigation Benefits
Physical disturbance and strike	• The Action Proponents will issue real-time notifications to alert Action Proponent vessels operating in the vicinity of large whale aggregations (four or more whales) sighted within 1 NM of an Action Proponent vessel within an area of the Southern California Range Complex (between 32–33 degrees North and 117.2–119.5 degrees West). o The four whales that make up a defined "aggregation" would not all need to be from the same species, and the aggregation could consist either of a single group of four (or more) whales, or any combination of smaller groups totaling four (e.g., two groups of two whales each or a group of three whales and a solitary whale) within the 1 NM zone. o Lookouts will use the information from the real-time notifications to inform their visual observations of applicable mitigation zones. If Lookouts observe a large whale aggregation within 1 NM of the event vicinity within the area between 32–33 degrees North and 117.2–119.5 degrees West, the watch station will initiate communication with the designated point of contact to contribute to the Navy's real-time sighting notification system.	• The real-time notification area encompasses the locations of recent (2009, 2021) vessel strikes, and historic strikes where precise latitude and longitude were known.

K.2 MITIGATION AREA ASSESSMENT

K.2.1 APPROACH TO ANALYSIS

In developing mitigation areas, the Action Proponents considered the manner and degree to which a potential mitigation measure was likely to reduce effects on species and stocks, while still being practical and safe to implement, and not impacting the effectiveness of military readiness activity in an impractical manner. The Action Proponents used a qualitative assessment process when considering potential geographic mitigation areas based on the best available science, the analyses from Chapter 3 (Affected Environment and Environmental Consequences), available tagging data, Navy marine species monitoring data, and input from the training and testing community.

Potential mitigation options within specific geographic areas include reducing or modifying activities in order to reduce effects on marine species or stocks and their habitat. For example, mitigation could include: limiting the total amount of activity in an area, limiting activities such that a certain number of sonar hours would not be exceeded, using an area less often or for a shorter duration, complete restriction of certain activities or the use of certain systems that result in a stressor, limiting the time of year that an activity is conducted, limiting certain activities to daylight hours only, limiting or restricting major training exercises in certain areas, implementing special reporting requirements, or requiring approval from a designated Command authority for conducting activities in certain areas or during certain times of year. The Action Proponents' mitigation objectives in this assessment are as follows:

- Ensure that the Proposed Action has only a negligible impact on marine mammal species, stocks, and populations;
- Identify means of effecting the least practicable adverse impact upon the affected marine mammal species or stocks and their habitat (as required by Section 101(a)(5)(A) of the MMPA);

- Ensure that the Proposed Action does not jeopardize the continued existence of endangered or threatened species, or result in destruction or adverse modification of critical habitat (as required under ESA); and
- Avoid or reduce the level of impact of incidental take to individuals and their habitat to the extent reasonable and prudent.

K.2.1.1 Stressors Considered for Analysis

The Action Proponents considered, when combined with the activity-based mitigation measures currently implemented, if the addition of geographic mitigation would avoid or further reduce adverse effects to marine mammals for the following stressors:

- Acoustic: Sonar and other transducers
- Explosives: In-water (applies only to those activities for which the Action Proponents seek MMPA authorization)

Active sonar and other transducers have the potential to result in incidental takes of marine mammals by behavioral harassment, temporary hearing loss or auditory injury. Explosives may result in takes by behavioral harassment, temporary hearing loss, auditory injury, non-auditory injury, or mortality.

Geographic mitigation only applies to activities which could result in acoustic and explosive stressors, and this appendix specifically discusses the potential impacts from those stressors on marine mammals in the revised BIAs off the Hawaiian Islands and California discussed in Section K.1.1.1 (Biologically Important Areas). Mitigation not specific to sonar and other transducers, and in-water explosives, for species other than marine mammals, are discussed in Chapter 5 (Mitigation) of the HCTT EIS/OEIS.

K.2.1.2 Biological Effectiveness Assessment

The first step of the mitigation area assessment was a biological effectiveness assessment (presented in the Biological Considerations sections) of each area identified in Section K.1.1 (Mitigation Areas Analyzed). This assessment considered if implementing geographic mitigation in these areas, in addition to activity-based mitigation measures which are implemented throughout the Study Area, would be effective at reducing adverse effects on marine mammal species or stocks and their habitat. Assessments of overlapping areas were combined whenever possible. The Action Proponents considered a specific mitigation area to be biologically effective if it met the following criteria:

1. The best available science suggests that the area is of biological importance to one or more species or resources for a biologically important life process (e.g., foraging, migration, or reproduction) or ecological function, year-round or for part of the year.
2. Implementing the mitigation would likely result in avoiding or minimizing injury or mortality; limiting interruption of known feeding, breeding, migratory, mother/young, or resting behaviors; minimizing the abandonment of important habitat (temporally and spatially); minimizing the number of individuals subjected to these types of disruptions; and limiting degradation of habitat.
3. Implementing the mitigation would not shift or transfer adverse effects from one species to another, or to a more vulnerable or sensitive species.

K.2.1.3 Operational Assessment

A second step, an operational assessment (presented in the Action Proponent Requirements for Area-Specific Training and Testing sections), considered what activities are conducted in specific geographic

areas and assessed the importance of those areas for those specific activities. The Action Proponents assessed how and to what degree a specific mitigation measure would be compatible with planning, scheduling, and conducting military readiness activities under the Proposed Action in order to meet each military service's respective national defense missions in accordance with their Congressionally mandated requirements.[2] In its operational assessment, the Action Proponents considered such things as impact on operations, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity. This part of the assessment also considered information from annual training exercise reports, testing event reports, monitoring reports, and feedback from members of the training and testing community who are responsible for implementing the mitigation.

It is vital that the Action Proponents effectively execute readiness activities to ensure forces can effectively execute military operations. The ability to schedule and locate training and testing without excessively burdensome restrictions within the Study Area is crucial to ensure those activities are practical, effective, and safe to execute. To meet their military readiness requirements, the Action Proponents require consistent access to a variety of realistic, tactically-relevant oceanographic and environmental conditions (e.g., bathymetry, topography, surface fronts, and variations in sea surface temperature), and sea space and airspace that is large enough or situated in a way that allows activities to be completed without physical or logistical obstructions, in order to achieve the highest skill proficiency and most accurate testing results possible in areas analogous to where the military operates. Some of the elements considered in selecting training and testing locations include:

- Proximity to training ranges, testing facilities, air squadrons, home ports, and existing infrastructure (e.g., instrumented underwater and land ranges);
- Availability of aircraft emergency landing fields;
- Access to a variety of realistic or unique tactical environments required to ensure training and testing effectiveness and meet testing program requirements;
- Ability to de-conflict participants (e.g., ships, aircraft, or submarines) or other users of the water and air space (e.g., commercial shipping, recreational boating, fishing, and commercial air traffic routes) during military activities to ensure the various training and testing events do not encroach on each other or other users.

The Action Proponents considered mitigation to be practical to implement if it met all criteria listed below (see Table 5-1 in Section 5.1, Practicality Assessment Criterion, for more details):

- Implementing mitigation must be safe: The mitigation must not increase safety risks to U.S. military personnel and equipment or the general public.
- Implementing mitigation must sustainable for the duration of the Proposed Action: The mitigation would not result in excessive time away from homeport or base for military personnel or an impracticable increase in resource requirements, such as wear and tear on equipment, additional fuel, additional personnel, additional funding, or undue shifting of time spent on operational obligations to other tasks (e.g., increased reporting requirements that take disproportionate time away from focusing on mission requirements).

[2] See Title 10, Sections 8062 (Navy), 8063 (USMC), 7062 (Army), 9062 (USAF) United States Code (U.S.C.) and Title 14, Sections 101 and 102 U.S.C. (USCG) for each service's specific language. Army and USAF are included only for their activities in Hawaii with potential in-water impacts.

- Implementing mitigation must allow for the Action Proponents to continue meeting mission objectives and statutory mandates: When assessing whether implementing mitigation would allow the Action Proponents to continue meeting their Congressionally mandated obligations, each individual measure was evaluated based on its impact on the effectiveness of the military readiness activity.

K.3 Biologically Important Areas Within the Hawaii Study Area

K.3.1 Main Hawaiian Islands Humpback Whale Reproduction Area

K.3.1.1 Biological Considerations Applicable to all Humpback Whale Reproduction Areas

NMFS recognizes 14 distinct population segments (DPS) of humpback whales worldwide, with four DPSs occurring in the North Pacific (Carretta et al., 2023). Humpback whales that occur seasonally in the HCTT Study Area are from three of the four DPSs identified by low-latitude wintering habitats: Hawaii DPS, Mexico DPS, and Central America DPS (Bettridge et al., 2015; Carretta et al., 2023; National Marine Fisheries Service, 2016b; Young, 2023). The three previously defined stocks of North Pacific humpback whales did not align with the DPS structure, so NMFS reevaluated the stock structure to incorporate both the locations of foraging and overwintering areas and population demographics. As a result, NMFS defined five stocks in the North Pacific:

1. Central America/Southern Mexico-California-Oregon-Washington stock
2. Mainland Mexico-California-Oregon-Washington stock
3. Mexico-North Pacific stock
4. Hawaii stock
5. Western North Pacific stock

Of the five stocks listed above, only the Hawaii stock is found in the Hawaii Study Area. Humpback whales wintering in Hawaii are identified as the Hawaii DPS and comprise the Hawaii stock. Humpback whales from the Hawaii DPS/stock forage across the North Pacific. Humpback whales in the Hawaii DPS are not listed under the ESA, because the population is believed to have fully recovered to its pre-whaling abundance (Barlow et al., 2011; Bettridge et al., 2015; Muto et al., 2017; National Marine Fisheries Service, 2016a; Wade et al., 2016).

Humpback whales that breed in Hawaii generally migrate to northern British Columbia and southeast Alaska to feed (Bettridge et al., 2015; Calambokidis et al., 2008). In the Hawaii portion of their range, peak densities are from February through March, although the breeding season typically spans December through April (Baird et al., 2015a; Mobley et al., 1999; Mobley et al., 2001; Norris et al., 1999). New survey data collected in offshore waters of the Main Hawaiian Islands in 2020 supported the development of the first habitat-based density model for humpback whale for the Hawaiian Islands EEZ (Becker et al., 2022b). This model provided further evidence that peak numbers of humpback whales occur within these waters from approximately February 19 through March 22. Acoustic recordings near the northwestern Hawaiian Islands indicate that humpback whales were present in the Hawaii Study Area from early December through early June (Lammers et al., 2011). It is not yet known if this represents a previously undocumented breeding stock or if the whales occurring at the northwestern Hawaiian Islands are part of the same population that winters near the Main Hawaiian Islands (Bettridge et al., 2015). Acoustic recordings over multiple years (including 2016) using the Pacific Missile Range Facility (PMRF) hydrophones have demonstrated a seasonal presence of humpback whales off Kauai

from November to May (Martin et al., 2016; Martin et al., 2017). The majority of humpback whales in Hawaii during the breeding season have been detected within the 200 m isobath (Mobley, 2005; Mobley et al., 2015; Mobley & Pacini, 2013; Mobley et al., 2001). This presence may include very nearshore and inland water areas (Richie et al., 2016).

There have been six locations identified in the main Hawaiian Islands as a single reproductive area for humpback whales (Baird et al., 2015a). The greatest densities of humpback whales (including calves) have been in the four-island region consisting of Maui, Molokai, Kahoolawe, and Lanai, as well as Penguin Bank (Mobley et al., 2001) and around Kauai (Mobley, 2005). A March 2007 pilot survey across the Northwest Hawaiian Islands documented the existence of extensive wintering habitat used by humpback whales in the Northwest Hawaiian Islands (Johnston et al., 2007).

Two humpback whale reproductive BIAs (a parent and a child BIA) have been delineated in the main Hawaiian Islands during the overwintering breeding season (Kratofil et al., 2023) (Figure K-7). The BIAs were updated from the original BIAs (Baird et al., 2015a) based on satellite tag data collected from 1995 to 2019. The parent BIA encompasses 23,042 km^2 and the child BIA encompasses 6,679 km^2, including what are likely the most important reproductive areas for humpback whales in the Main Hawaiian Islands (Kratofil et al., 2023). The BIAs are in effect from December through May.

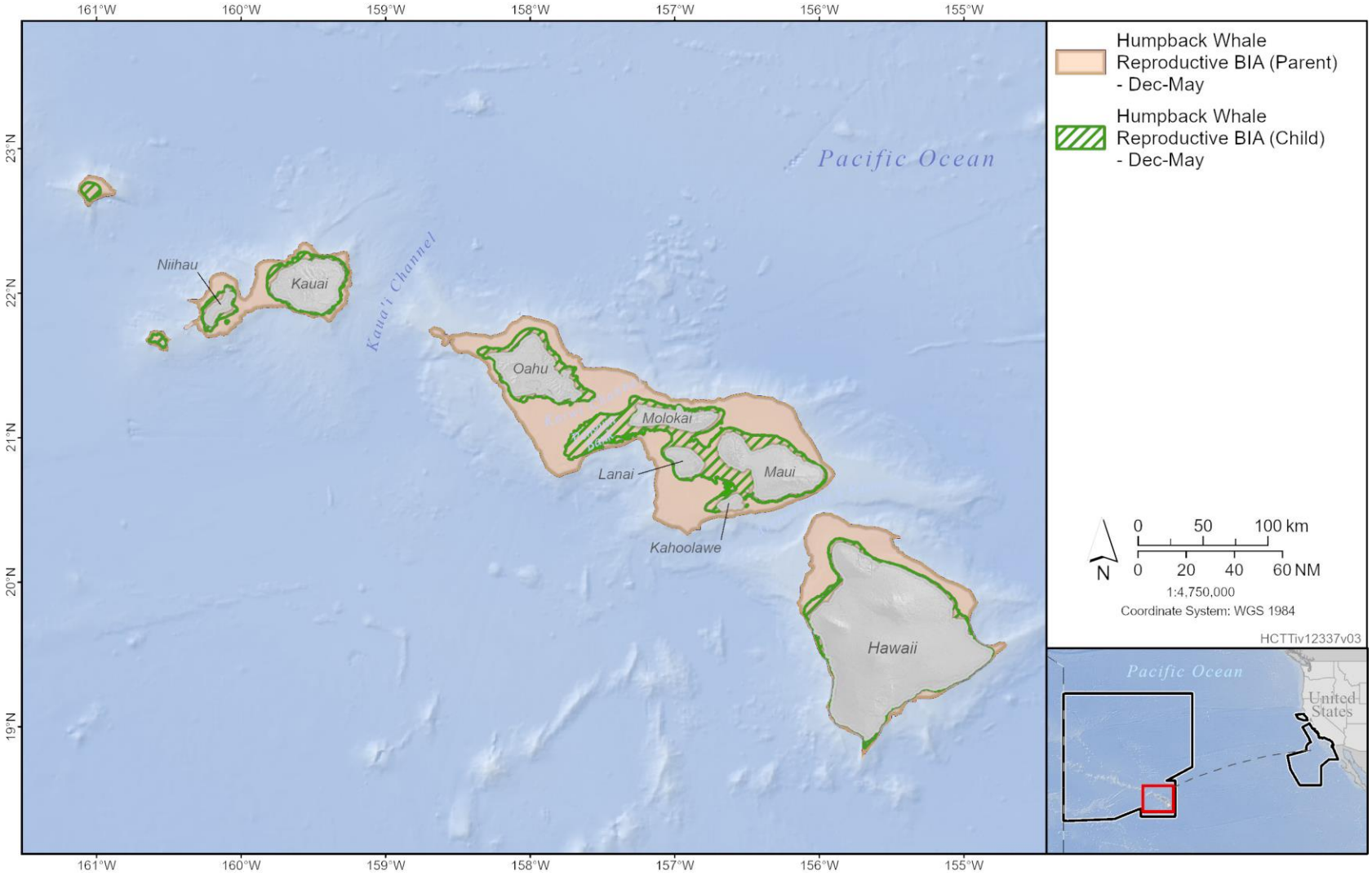


Figure K-7: Main Hawaiian Islands Humpback Whale Reproductive BIAs Off the Hawaiian Islands

K.3.1.2 Stressor Analysis

K.3.1.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other transducers create underwater acoustic energy potentially impacting humpback whales and their reproductive behavior. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 97 percent of effects are predicted to occur in the Hawaii Range Complex during the cold season. Ninety-three percent of the behavioral, 95 percent of the temporary threshold shift, and 63 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only one take (behavioral) is predicted from the training and testing activities involving air guns.

On average, individuals in the Hawaii stock would be impacted less than once per year. These effects are most likely to occur in the cold season when humpbacks would be seasonally present in the area and engaged in breeding behavior. The average risk of injury is low, although it is likely that some auditory injuries could occur, particularly from sonar activities during Navy training events. The risk of injury may be reduced through activity-based mitigation.

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an auditory injury may experience minor energetic costs. Most predicted effects are temporary auditory effects that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to the stock are unlikely.

K.3.1.3 Action Proponent Requirements for Area-Specific Training and Testing

The main Hawaiian Islands humpback whale reproductive BIAs encompass waters around the islands of Hawaii, Oahu, Kauai, Maui, Molokai, Lanai, Kahoolawe, and Niihau within the Hawaii Study Area. These waters encompass many of the primary training sites within the Hawaii Range Complex. Spatially, Humpback whales may be present anywhere within the waters surrounding the Hawaiian Islands. Temporally, Humpback whales may be present most of the year, however breeding season (December through April) is when they are most likely to be present.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The training and testing areas encompassed by the humpback whale BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Pacific Range Missile Facility, shallow water training range and barking sands tactical underwater range west of Kauai, Ewa training minefield and Puuloa underwater

range south of Oahu, the Kahoolawe sub training minefield, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

K.3.1.4 Humpback Whale Reproduction Area Mitigation Considerations

As discussed in Section K.3.1.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to humpback whales that would occur in the Hawaii Range Complex are from training and testing activities involving sonar during the cold season as humpback whales breed in the waters surrounding the Hawaiian Islands. Most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals.

Existing geographic mitigation areas resulting from the 2018 HSTT EIS/OEIS are currently in place in the waters surrounding the Hawaiian Islands and include the existing Hawaii 4-Islands Region Mitigation Area, Hawaii Island Marine Mammal Mitigation Area, and the Hawaii Humpback Whale Special Reporting Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area). These mitigation areas, as shown in Figure K-26, encompass some of the revised main Hawaiian Islands humpback whale child BIA and will continue to be implemented because they provide a benefit to the Hawaii stock of humpback whales during their breeding season. In addition, the Hawaii Humpback Whale Special Reporting Area will be expanded based on the revised humpback whale child BIA.

K.3.2 Hawaii Island Dwarf Sperm Whale Small and Resident Population Area

K.3.2.1 Biological Considerations Applicable to the Hawaii Island Dwarf Sperm Whale Small and Resident Population Area

NMFS recognizes two stocks of dwarf sperm whales within the Pacific U.S. Exclusive Economic Zone: the Hawaiian stock and the California, Oregon, and Washington stock (Carretta et al., 2023). Only the Hawaiian stock is present in the Hawaii Study Area.

There were a total of six pygmy sperm whale sightings during systematic ship surveys within the Hawaiian Islands EEZ in 2002, 2010, and 2017, and none of the sightings were in waters within 140 km of the Main Hawaiian Islands (Bradford et al., 2021). During small boat surveys between 2002 and 2012 in the main Hawaiian Islands, this species was the fifth most frequently encountered species of odontocete in waters shallower than 1,000 m with a strong peak in the sighting rate where depths are between 500 and 1,000 m (Baird et al., 2013b; Oleson et al., 2013a). Dwarf sperm whales have been seen near Niihau, Kauai, Oahu, Lanai, and Hawaii. Photo-identification of individuals off Hawaii Island since 2003 has provided evidence of long-term site fidelity, with a third of identified individuals being seen in more than one year, and therefore suggesting the existence of an island-resident population (Baird et al., 2015a; Oleson et al., 2013b).

BIAs were redefined for a year-round Small and Resident Population area for dwarf sperm whales off the west coast of the Island of Hawaii (Kratofil et al., 2023) which incorporated additional sighting data not available when the original BIA was defined (Baird et al., 2015a). The parent BIA is 1,341 km^2 in size and encompasses all sighting locations in waters less than 2,000 m (Figure K-8). The child BIA represents an area of intensified use relative to the entire range of this island-associated population and encompasses 457 km^2.

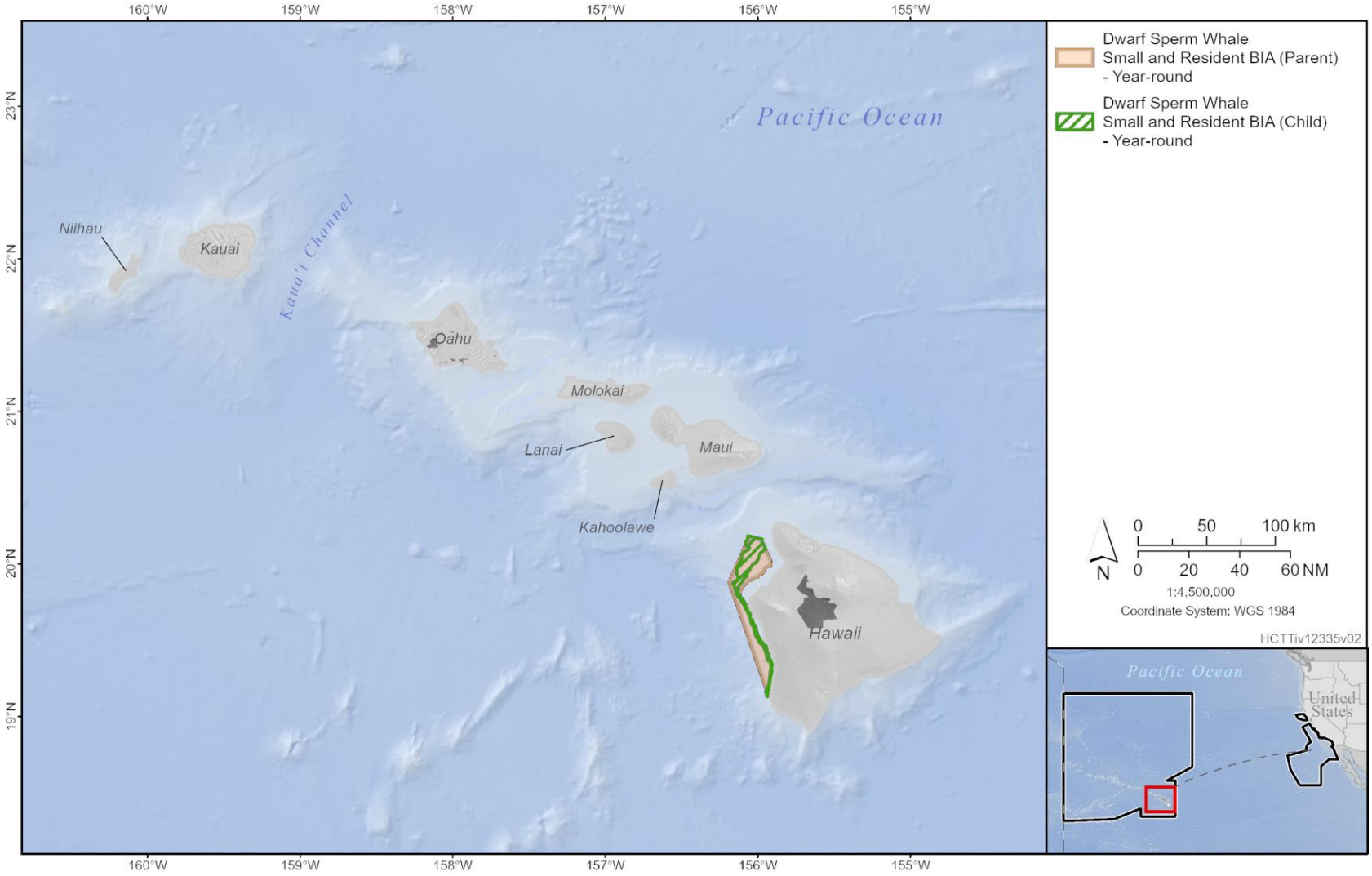


Figure K-8: Dwarf Sperm Whale Small and Resident BIAs Off Hawaii

K.3.2.2 Stressor Analysis

K.3.2.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting dwarf sperm whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 50 percent of effects are predicted to occur in Hawaii Range Complex during the cold season, and 43 percent would occur in the warm season. The remaining 7 percent would occur on the high seas, split approximately evenly between the cold and warm seasons. Ninety-six percent of the behavioral, 98 percent of the temporary threshold shift, and 77 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Behavioral, temporary threshold, and acoustic injury takes are predicted to occur from the training and testing activities involving air guns, however, they would also be extremely infrequent.

On average, individuals in the Hawaii stocks could be impacted about once per year. The average risk of injury is low, although a few auditory and non-auditory injuries are predicted. The risk of any air gun auditory injury is negligible (less than one) in any year for the Hawaii stock of dwarf sperm whales, but an auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Likewise, the risk of a non-auditory injury from explosives is also incredibly low (less than one) in any year for the stock, but an auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach. These auditory and non-auditory injuries are shown in the maximum year of effects per the summation and rounding approach discussed above. Therefore, the risk of non-auditory injury from any source is unlikely. The risk of injury may be reduced through activity-based mitigation, although dwarf sperm whales have low sightability.

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an auditory or non-auditory injury may experience minor energetic costs. Most predicted effects are temporary auditory effects that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to these stocks are unlikely.

K.3.2.3 Action Proponent Requirements for Area-Specific Training and Testing

Hawaii Island is unique in that it is provides the only capable air-to-ground range able to conduct carrier and expeditionary strike group activities near a channel with unfettered access to the open ocean. Open ocean areas support strike group maneuvering, using mid-frequency active sonar to prosecute (detect/track) a submarine in the vicinity of a high value unit (e.g., carrier) as aircraft execute strikes into Pohakuloa Training Area. The area around Hawaii Island is also used by surface ships with anti-submarine warfare capability to train for clearing the sea space of any submarine threat before Marines

go ashore at Kawaihae Harbor (part of Rim of the Pacific and Marine Corps unit-level training scenarios). There are limited locations for amphibious landings in Hawaii due to existing environmental concerns. The west coast of Hawaii is one of the best locations for integrated joint marine amphibious operations because of its close proximity to the Pohakuloa Training Area which is the only range in the Hawaii Range Complex that supports ground force and aviation live-fire training.

The Hawaii Island Dwarf Sperm Whale Small and Resident Population Area is adjacent to waters approaching Kawaihae Harbor, the point of amphibious insertion for forces proceeding to the live-fire range at Pohakuloa Training Area.

Activities utilizing explosives, such as underwater detonations, bombing or torpedo exercises, are not conducted in the waters within the Dwarf Sperm Whale Small and Resident Population Area since it is not within a designated underwater training range or within Special Use Airspace, typically necessary for explosive usage.

K.3.2.4 Dwarf Sperm Whale Small and Resident Population Area Mitigation Assessment

The Action Proponents have been training and testing in the area with the same basic systems for over 40 years and there is no evidence of any adverse effects having occurred, and there are multiple lines of evidence demonstrating the population's high site fidelity to the area. The revised small and resident population area only takes up a very small portion of the Hawaii Range Complex, and sonar use in this area would be infrequent and typically only last for a short duration. Few, if any, Navy vessels are likely to be within the designated area using active mid-frequency sonar or other transducers. However, during the occasional use of mid-frequency active acoustic sonar during Undersea Warfare training, Independent Deployer Certification training, and Rim of the Pacific training, a small number of significant behavioral responses from dwarf sperm whales could occur within the small and resident population area. The majority of predicted effects on individuals in the dwarf sperm whale resident population are expected to be result in behavioral and temporary threshold shift takes as a result of military readiness activities that use sonar and other transducers.

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for dwarf sperm whales and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area (Figure K-26) (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which overlaps the entire revised small and resident child BIA. While this mitigation area is designed to provide additional protection for humpback whales, false killer whales and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including dwarf sperm whales without compromising military readiness. The Action Proponents will continue to implement this existing mitigation area to the benefit of the Hawaii stock of the dwarf sperm whales. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised Hawaii Island dwarf sperm whale child BIA are not being proposed.

K.3.3 False Killer Whale Small and Resident Population Area: Main Hawaiian Island Insular Stock

K.3.3.1 Biological Considerations Applicable to the Main Hawaiian Islands Insular Stock False Killer Whales Small and Resident Population Area

NMFS currently recognizes three stocks of false killer whale in Hawaiian waters: the Hawaii pelagic stock, the Northwestern Hawaiian Islands stock, and the Main Hawaiian Islands insular stock (Bradford et al., 2015; Carretta et al., 2023; Carretta et al., 2015; Forney et al., 2010; National Oceanic and Atmospheric Administration, 2012; Oleson et al., 2010). The Hawaii Pelagic stock and the Northwestern Hawaiian Islands stock of false killer whales are not listed as threatened or endangered under the ESA. The Main Hawaiian Islands insular stock is listed as endangered under the ESA as a DPS (National Oceanic and Atmospheric Administration, 2012).

The ranges and stock boundary descriptions for false killer whales in the Hawaiian Islands are complex and overlapping. For example, all three stocks are known to overlap in the vicinity of Kauai and Niihau, which is where the Navy's underwater instrumented range has been in use since the 1980s. All significant information regarding the range of the three stocks was presented in Bradford et al. (2015), and later updated for the pelagic stock (Bradford et al., 2020). A summary of the data used to delineate the stock boundaries, and the research supporting those data are provided in the Final 2022 Pacific Stock Assessment Report (Carretta et al., 2023) that is synthesized in the next few paragraphs for the stocks in the Hawaiian Islands.

The Main Hawaiian Islands insular stock is considered resident to the main Hawaiian Islands consisting of Kauai, Oahu, Molokai, Lanai, Kahoolawe, Maui, and Hawaii, although they have been satellite tracked as far as 115 km from the main Hawaiian Islands (Bradford et al., 2020; Bradford et al., 2012; Bradford et al., 2015; Carretta et al., 2015; Forney et al., 2010; National Oceanic and Atmospheric Administration, 2012; Oleson et al., 2010). The Main Hawaiian Islands insular stock boundary is a 72-km radius extending around the main Hawaiian Islands, with the offshore extent of the radii connected on the leeward sides of Hawaii Island and Niihau to encompass the offshore movements of Main Hawaiian Islands insular stock animals within that region.

False killer whales in the Northwestern Hawaiian Islands stock have been seen as far as 93 km from the Northwestern Hawaiian Islands and near shore around Kauai and Oahu (Baird et al., 2012; Bradford et al., 2015). The Northwestern Hawaiian Islands stock boundary is defined by a 93-km radius around Kauai, Niihau, and the Northwestern Hawaiian Islands, with the boundary around the Northwestern Hawaiian Islands expanded latitudinally at the eastern end to encompass animal movements observed outside the 93-km radius.

Given new telemetry data that indicated that pelagic stock animals occurred within 5.6 km of the main Hawaiian Islands and throughout the Northwestern Hawaiian Islands, the previous inner pelagic stock boundary at 11 km from shore around each of the main Hawaiian Islands was removed (Bradford et al., 2020). The pelagic stock now has no inner or outer boundary within the Hawaiian Islands EEZ. There is now an overlap zone between the entirety of the Main Hawaiian Islands insular stock area and the pelagic stock area. There is also now an overlap zone between the entirety of the Northwestern Hawaiian Islands stock area and the pelagic stock area. All three stock boundaries overlap out to the Main Hawaiian Islands insular stock boundary between Kauai and Niihau and the Northwestern Hawaiian Islands stock boundary between Kauai and Oahu (Carretta et al., 2023).

Two year-round Small and Resident Population BIAs (a parent and a child BIA) have been delineated in the main Hawaiian Islands for the insular stock of false killer whales (Kratofil et al., 2023) (Figure K-9). The BIAs were updated from the original BIAs published by (Baird et al., 2015a) based on additional analysis of photo-identification, satellite tracking, and genetic studies. The parent BIA encompasses 94,217 km^2 and the child BIA encompasses 7,775 km^2, the latter representing the core high-use areas in the Main Hawaiian Islands (Kratofil et al., 2023). In addition, a year-round non-hierarchical Small and Resident Population BIA was delineated for the Northwestern Hawaiian Islands and encompasses 138,001 km^2 (Kratofil et al., 2023) (Figure K-9).

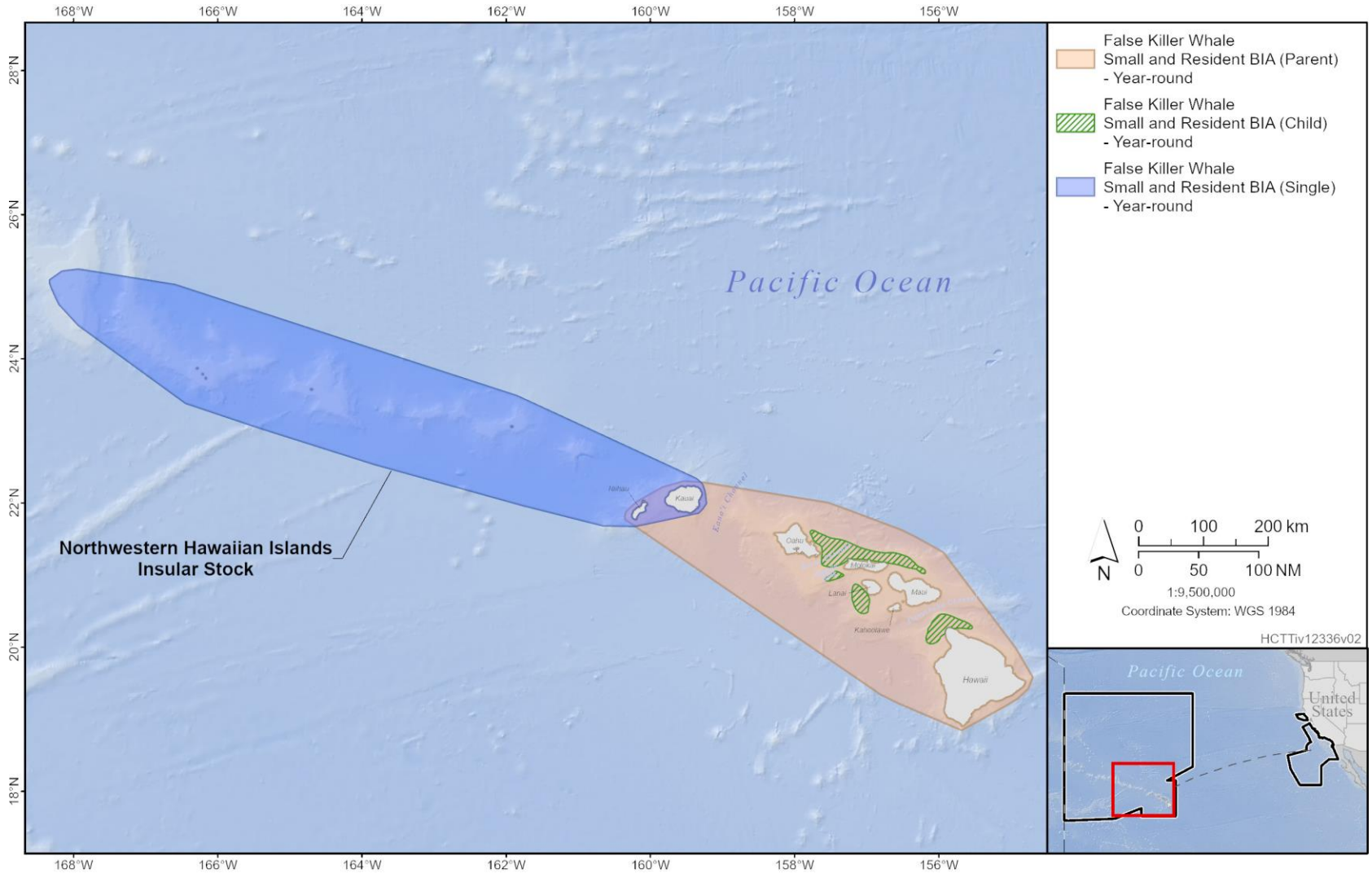


Figure K-9: False Killer Whale Small and Resident BIAs off the Hawaiian Islands

K.3.3.2 Stressor Analysis

K.3.3.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting false killer whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, the effects that are predicted to occur in Hawaii Range Complex to the three stocks of false killer whales present in the waters surrounding the Hawaiian Islands are distributed relatively evenly between the cold and warm seasons. The northwestern Hawaiian Islands stock has the biggest difference in effects between seasons, with 68 percent occurring during the cold season and 32 percent occurring during the warm season. For all the main Hawaiian Island insular stock and the Hawaii pelagic stock, 99 percent of the behavioral and 98 percent of the temporary threshold shift takes would result from training and testing activities involving sonar. One hundred percent of behavioral and temporary threshold shift takes for the northwestern Hawaiian Islands stock would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. No effects are predicted to occur from the training and testing activities involving air guns to any of the three stocks.

On average, individuals in the Hawaii Pelagic stock and the Northwestern Hawaiian Islands stock would be impacted less than once per year. On average, individuals in the Main Hawaiian Islands insular stock would be impacted about once per year. The average individual risk of injurious effects in these three stocks is negligible, if even applicable. No auditory or non-auditory injuries are predicted for the Northwest Hawaiian Islands or the Main Hawaiian Islands Insular stocks, but a single auditory injury could occur to individuals in the Hawaii Pelagic stock. However, the risk of a non-auditory injury in Hawaii from explosive training is low (less than one) in any year, but single mortalities (from sonar testing in Hawaii) are shown in the maximum year of effects per the summation and rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of any auditory injury is unlikely for these stocks of false killer whales in the HCTT Study Area. The risk of auditory injury may also be reduced through activity-based mitigation.

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals. Long-term consequences to the Main Hawaiian Islands Insular, Hawaii Pelagic, and the Northwestern Hawaiian Islands stocks of false killer whales are unlikely.

K.3.3.3 Action Proponent Requirements for Area-Specific Training and Testing

The revised false killer whale small and resident BIAs within the Hawaii Study Area encompass every primary training site within the Hawaii Range Complex. Spatially, false killer whales may be present anywhere within the waters off surrounding the Hawaiian Islands. Temporally, false killer whales may be present throughout the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Action Proponent readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The training and testing areas encompassed by the revised false killer whale BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Pacific Range Missile Facility, shallow water training range and barking sands tactical underwater range west of Kauai, Ewa training minefield and Puuloa underwater range south of Oahu, the Kahoolawe sub training minefield, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

The Alenuihaha Channel and the waters west of Kawaihae Harbor are used for a broad spectrum of naval and amphibious training. Excessively limiting or restricting mid-frequency active sonar training in the Alenuihaha Channel could force the relocation of portions of Undersea Warfare training, Independent Deployer Certification training, Rim of the Pacific, and unit level training exercises to other channels in the Hawaiian Operating Areas (OPAREAs) further from the Pohakuloa Training Area range. Undersea Warfare certification training occurs up to three times per year, Rim of the Pacific occurs once every two years, and Independent Deployer Certification training occurs once per year. While the North and West of Hawaii Island False Killer Whale Small and Resident Population Area is not considered an area of high use for mid-frequency active sonar during these major training exercises, segmenting the scenarios within each of these training events over time and space would result in an unacceptable loss of training realism, degrade the training and would erode strike group readiness.

As it relates to anti-submarine warfare, the training value within the 4-Islands Region is much higher compared to other near shore environments within the Hawaii Range Complex, including the ranges at the PMRF, due to the challenging bathymetry. Shifting the location for Submarine Command Course would result in a loss of shallow water operating experience for prospective submarine Commanding Officers, which is an absolutely vital skill for these commanders to master. Such a shift in location would result in a loss of shallow water operating experience and would compromise a submarine crew's ability to retain and improve their capabilities and to train with new emerging technologies.

K.3.3.4 False Killer Whale Small and Resident Population Area Mitigation Assessment

While the Action Proponents have been training and testing in the area with the same basic systems for over 40 years, there is no evidence of any adverse effects having occurred, and there are multiple lines of evidence demonstrating the population's high site fidelity to the area. Individuals within the False Killer Whale Small and Resident Population Area could be exposed to sound from sonar or other transducers and some behavioral or temporary effects could occur as a result of sonar or other transducers.

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for false killer whales and other species, and therefore implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Region Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area). These mitigation areas as shown in Figure K-26 both overlap some of the revised small and resident child BIA. While these mitigation areas are designed to provide additional protection to false killer whales and other species such as humpback whales and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the

area, including dwarf sperm whales, short-finned pilot whales, melon-headed whales, pantropical spotted dolphins, pygmy killer whales, and spinner dolphins occurring without compromising military readiness. Final mitigation measures resulting from consultation will be documented in the Navy ROD.

K.3.4 Hawaii Island Pygmy Killer Whale Small and Resident Population Area

K.3.4.1 Biological Considerations Applicable to the Pygmy Killer Whales Small and Resident Population Area

The pygmy killer whale is generally an open ocean deepwater species (Davis et al., 2000; McSweeney et al., 2009; Oleson et al., 2013a; Würsig et al., 2000). Movement patterns for this species are poorly understood. During a NMFS 2014 systematic ship survey off the U.S. West Coast, when there were unusually warm water conditions, a group of 27 pygmy killer whales was sighted in offshore waters of Southern California (Barlow, 2016). Given that there is a remote likelihood for this species to occur regularly off the U.S. West Coast, the 2022 Pacific Stock Assessment report does not include pygmy killer whales as a managed stock in California waters (Carretta et al., 2023).

This species' range in the open ocean generally extends to the southern regions of the North Pacific Gyre and the southern portions of the North Pacific Transition Zone. Many sightings have occurred from cetacean surveys of the eastern tropical Pacific (Au & Perryman, 1985; Barlow & Gisiner, 2006; Wade & Gerrodette, 1993). This species is also known to be present in the western Pacific (Wang & Yang, 2006). Its range is generally considered to be south of 40° N and continuous across the Pacific (Donahue & Perryman, 2008; Jefferson et al., 2008). There was a total of 11 sightings of pygmy killer whales during three systematic ship surveys of the Hawaiian Islands EEZ in 2002 (3 sightings), 2010 (5 sightings), and 2017 (3 sightings), with average group size ranging from 14.6 to 25.7 animals (Bradford et al., 2021).

A year-round Small and Resident Population area has been identified for pygmy killer whales off the Island of Hawaii (Baird et al., 2015a). The delineated area extends along the coast of Hawaii Island from northwest of Kawaihae to South Point and along the southeast coast of the island, as determined by locations from two satellite-tagged individuals, photo-identification data, extensive vessel-based survey data, and expert judgment (Baird et al., 2015a). Two year-round, non-hierarchical Small and Resident Population BIAs have been delineated in the main Hawaiian Islands for pygmy killer whales (Kratofil et al., 2023) (Figure K-10). The BIAs were updated from the original BIAs (Baird et al., 2015a) based on additional analyses. One BIA encompasses 7,416 km^2 of waters surrounding Oahu and Maui Nui, and the second BIA encompasses 5,201 km^2 around the Island of Hawaii (Kratofil et al., 2023).

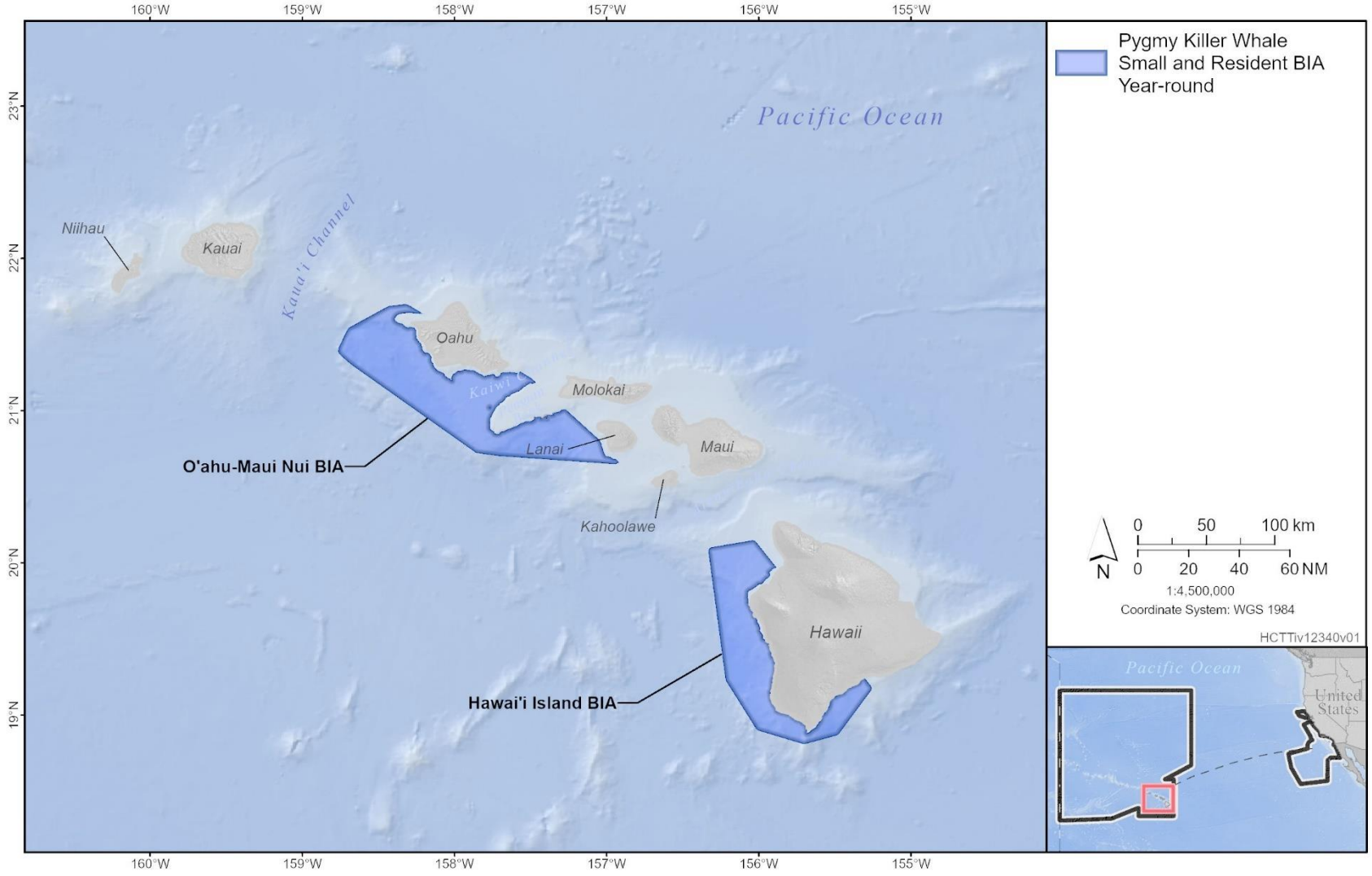


Figure K-10: Pygmy Killer Whale Small and Resident BIA Off the Hawaiian Islands

K.3.4.2 Stressor Analysis

K.3.4.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting pygmy killer whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 48 percent of effects are predicted to occur in Hawaii Range Complex during the cold season, and 47 percent would occur in the warm season. The remaining five percent would occur on the high seas, split evenly between the cold and warm seasons. Ninety-nine percent of the behavioral, 99 percent of the temporary threshold shift, and 66 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIA, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. No effects are predicted to occur from the training and testing activities involving air guns.

On average, individuals in the Hawaii stock would be impacted less than once per year. The average individual risk of injurious effects is negligible. A small number of auditory injuries could occur to individuals in Hawaii, however, the risk of auditory injuries in Hawaii from explosive training or sonar testing is low (less than one) in any year. For each stressor, a single auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of auditory injury is unlikely. The risk of injury may be reduced through activity-based mitigation.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals that experience auditory injury may incur energetic costs. Based on the above analysis, long-term consequences for the Hawaii stock of pygmy killer whales are unlikely.

K.3.4.3 Action Proponent Requirements for Area-Specific Training and Testing

The revised Hawaii Island Pygmy Killer Whale Small and Resident Population Area includes the area south and west of Kawaihae Harbor, as well as the waters west of Lanai in the 4-islands area, and the waters south and west of Oahu. Spatially, pygmy killer whales may be present anywhere within these waters, and temporally, pygmy killer whales may be present throughout the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The waters west of Hawaii and Kawaihae Harbor provide access for a broad spectrum of naval and amphibious training. Kawaihae Harbor is the point of amphibious insertion for forces proceeding to the live-fire range at Pohakuloa Training Area, and this training area is the only live-fire range in the Hawaii Range Complex that supports ground force and aviation live-fire training. Training in this area allows for

the integration of carrier strike group operations and amphibious landings. Sea, air, and land-based units work in conjunction with one another in controlled airspace in close proximity to the Pohakuloa Training Area range, the only range of its kind in Hawaii. This is also an area outside of civilian air traffic corridors approaching the Honolulu International Airport which is necessary to safely de-conflict with civilian air traffic.

Carrier strike group training can include a full spectrum of the force – various ships, submarines, aircraft, and Marine Corps forces—to ensure such forces obtain the required proficiency to conduct anti-submarine warfare in a controlled and observed environment prior to deployment to international straits across the globe, where operational Commanders require Naval forces to be able to conduct a range of military operations, including anti-submarine warfare. This required proficiency cannot be replicated by simulation and is most effectively obtained when conducted in a strait. Commanding Officers cannot be expected to effectively conduct such operations in a deployed environment if the first time they encounter a submarine in a strait is in a deployed setting. Access to the waters west of Kawaihae Harbor is vital for amphibious training. The west coast of Hawaii is one of the best locations for integrated joint marine amphibious operations because of its close proximity to the Pohakuloa Training Area. Also, due to its proximity to the Alenuihaha Channel, waters west of Hawaii and Kawaihae Harbor have strategic importance during portions of Undersea Warfare training, Independent Deployer Certification training, Rim of the Pacific, and unit level training and other exercises The area provides a unique and irreplaceable capability within the Hawaii Range Complex that allows naval forces to conduct realistic, integrated training in an environment that replicates the actual areas where they will be called to serve.

The training value within the 4-Islands Region is much higher compared to other near shore environments within the Hawaii Range Complex, including the ranges at the PMRF, due to the challenging bathymetry. Shifting the location for Submarine Command Course would result in a loss of shallow water operating experience for prospective submarine Commanding Officers, which is an absolutely vital skill for these commanders to master. Such a shift in location would result in a loss of shallow water operating experience and would compromise a submarine crew's ability to retain and improve their capabilities and to train with new emerging technologies.

K.3.4.4 Hawaii Island Pygmy Killer Whales Small and Resident Population Area Mitigation Assessment

As discussed in Section K.3.4.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to pygmy killer whales that would occur in the Hawaii Range Complex are from training and testing activities involving sonar during both the cold and warm seasons. Most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals.

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for pygmy killer whales and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area). The Hawaii Island Marine Mammal Mitigation Area, as shown in Figure K-26, overlaps all of the Hawaii Island BIA, and the Hawaii 4-Islands Marine Mammal Mitigation Area overlaps some of the Mau Nui BIA. While these mitigation areas are designed to provide additional protection for humpback whales, false killer whales and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including pygmy killer whales, without compromising military readiness. The Action Proponents will continue to

implement these existing mitigation areas to the benefit of the pygmy killer whales present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised Hawaii Island pygmy killer whale BIAs are not being proposed.

K.3.5 Hawaii Island Short-Finned Pilot Whale Small and Resident Population Area

K.3.5.1 Biological Considerations Applicable to the Hawaii Island Short-finned Pilot Whales Small and Resident Population Area

Short-finned pilot whales in the Hawaiian Islands were the most commonly encountered species of odontocete during near-shore surveys in depths over 2,000 meters and were one of the most common species encountered during the NMFS 2002 (25 sightings), 2010 (36 sightings), and 2017 (35 sightings) systematic ship surveys of the Hawaiian Exclusive Economic Zone (Baird et al., 2013b; Barlow, 2006; Bradford et al., 2013a; Bradford et al., 2021; Oleson et al., 2013a). Small boat surveys from 2003 through 2007 photo-identified 250 individuals seen in more than one year, suggesting site fidelity (Abecassis et al., 2015; Mahaffy et al., 2015; Oleson et al., 2013a). Habitat-based models developed from systematic ship survey data collected in the central North Pacific show some of the highest short-finned pilot whale densities around the Hawaiian Islands (Becker et al., 2012b; Forney et al., 2015). Sighting data from systematic ship surveys conducted within waters of the Hawaiian Islands EEZ from 2000 to 2020 supported the development of an updated habitat-based density model for short-finned pilot whale and confirmed the strong island association indicated from the previous models (Becker et al., 2022a).

A year-round Small and Resident Population parent BIA and three child BIAs have been delineated for short-finned pilot whales in waters of the Main Hawaiian Islands (Kratofil et al., 2023) (Figure K-11). The BIAs were updated from the original BIA (Baird et al., 2015a) based on additional analyses. The parent BIA encompasses 58,999 km^2 of waters surrounding all of the Main Hawaiian Islands. The child BIAs encompass three communities representing core habitat in the Main Hawaiian Islands: a western community (4,040 km^2), a central community (2,427 km^2), and an eastern community (2,658 km^2) that encompass waters mainly on the leeward sides of Kauai, Oahu. Lanai, and the Island of Hawaii (Kratofil et al., 2023) (Figure K-11).

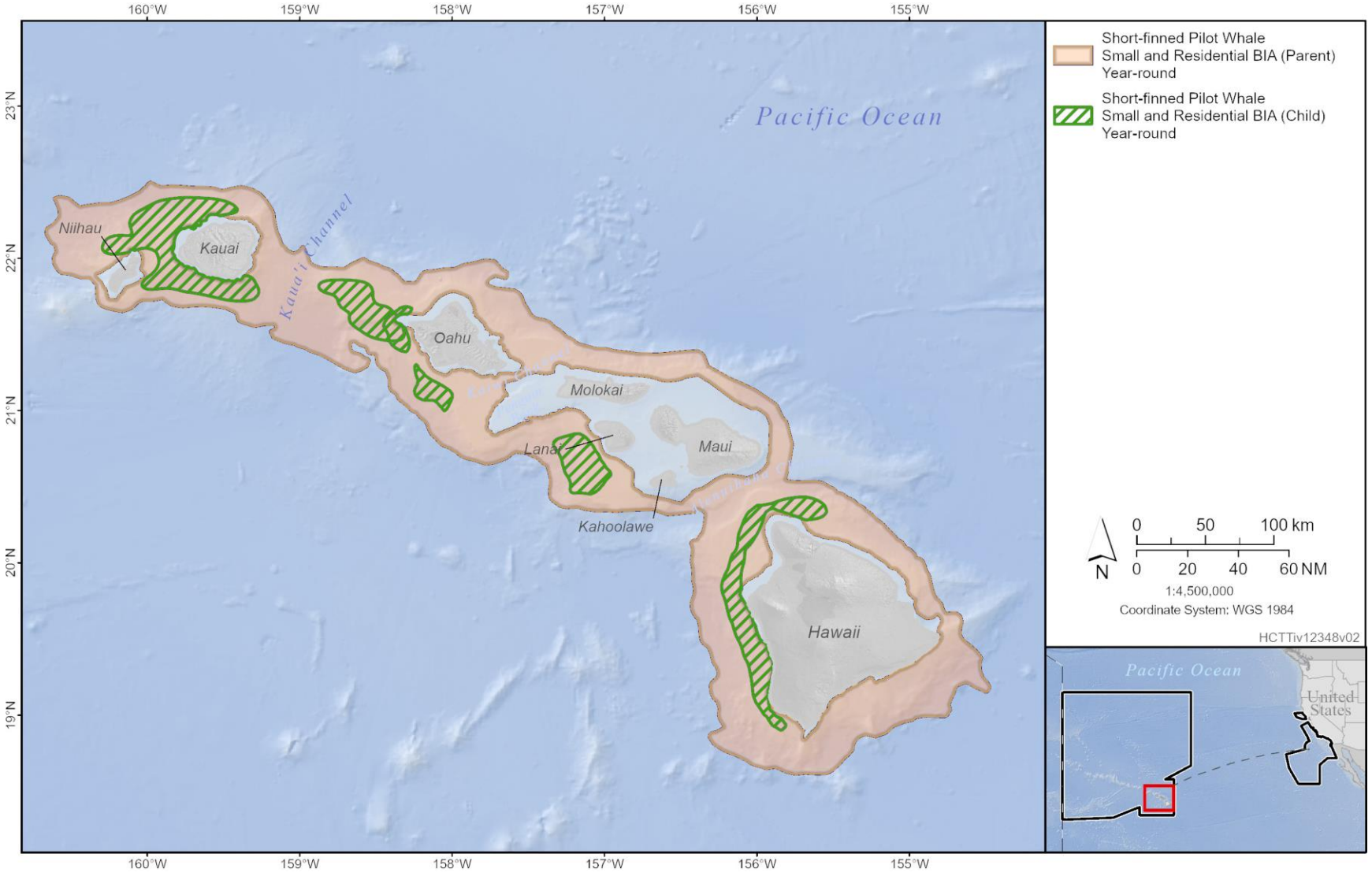


Figure K-11: Short-Finned Pilot Whale Small and Resident BIAs Off the Hawaiian Islands

K.3.5.2 Stressor Analysis

K.3.5.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting short-finned pilot whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 51 percent of effects are predicted to occur in Hawaii Range Complex during the cold season, and 46 percent would occur in the warm season. The remaining three percent would occur on the high seas, split approximately evenly between the cold and warm seasons. Ninety-nine percent of the behavioral, 99 percent of the temporary threshold shift, and 50 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only one take (behavioral) resulting from testing activities involving air guns is predicted to occur.

On average, individuals in the Hawaii stock could be impacted less than once per year. The average individual risk of injurious effects is very low, although a small number of auditory and non-auditory injuries could occur to individuals. The risk of a non-auditory injury in Hawaii from explosive training is low (less than one) in any year, but a single mortality from explosive training is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of any non-auditory injury is unlikely for the Hawaii stock of short-finned pilot whales. The risk of injury or mortality may be reduced through activity-based mitigation.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who experience auditory or non-auditory injury would incur energetic costs. Based on the above analysis, long-term consequences for the Hawaii stock of short-finned pilot whales are unlikely.

K.3.5.3 Action Proponent Requirements for Area-Specific Training and Testing

The main Hawaii Island short-finned pilot whale small and resident BIAs encompass waters around the islands of Hawaii, Oahu, Kauai, Maui, Molokai, Lanai, Kahoolawe, and Niihau within the Hawaii Study Area. These waters encompass many of the primary training sites within the Hawaii Range Complex. Spatially, Hawaii Island short-finned pilot whales may be present anywhere within the waters off surrounding the Hawaiian Islands. Temporally, the stock is present throughout the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The training and testing areas encompassed by the Hawaii Island short-finned pilot whale small and resident BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Pacific Range Missile Facility, shallow water training range and barking sands tactical underwater range west of Kauai, Ewa training minefield and Puuloa underwater range south of Oahu, the Kahoolawe sub training minefield, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

K.3.5.4 Hawaii Island Short-finned Pilot Whales Small and Resident Population Area Mitigation Assessment

The has Action Proponents have been training and testing in the Hawaiian Islands with the same basic systems for over 40 years and there is no evidence of any adverse effects having occurred, and there are multiple lines of evidence demonstrating the population's high site fidelity to the area. As discussed in Section K.3.5.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to short-finned pilot whales that would occur in the Hawaii Range Complex are from training and testing activities involving sonar during both the cold and warm seasons. Most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals.

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for short-finned pilot whales and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area). These mitigation areas, as shown in Figure K-26, overlap some of revised Hawaii Island short-finned pilot whales small and resident child BIAs. While these mitigation areas are designed to provide additional protection for humpback whales, false killer whales and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including short-finned pilot whales without compromising military readiness. The Action Proponents will continue to implement these existing mitigation areas to the benefit of short-finned pilot whales present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised Hawaii Island short-finned pilot whale child BIAs are not being proposed.

K.3.6 Hawaii Island Melon-Headed Whales Small and Resident Population Area

K.3.6.1 Biological Considerations Applicable to the Hawaii Island Melon-Headed Whales Small and Resident Population Area

NMFS recognizes two stocks of melon-headed whales within the Hawaiian Islands Exclusive Economic Zone: the Kohala Resident stock, which includes melon-headed whales off the Kohala and west coast of Hawaii Island in waters less than 2,500 m deep; and the Hawaiian Islands stock, which includes melon-headed whales inhabiting waters throughout the U.S. Exclusive Economic Zone of the Hawaiian Islands (Aschettino et al., 2012; Baird et al., 2015a; Carretta et al., 2023; Carretta et al., 2017; Oleson et al., 2013b).

The melon-headed whale is regularly found within Hawaiian waters (Baird et al., 2010; Baird et al., 2015b; Baird et al., 2003a; Baird et al., 2003b; Mobley et al., 2000; Shallenberger, 1981). Large groups are seen regularly, especially off the Waianae coast of Oahu, the north Kohala coast of Hawaii, and the leeward coast of Lanai (Baird, 2006; Oleson et al., 2013a; Shallenberger, 1981). There was a total of nine

sightings of melon-headed whales during three systematic ship surveys of the Hawaiian Islands EEZ in 2002 (one sighting), 2010 (one sighting), and 2017 (seven sightings) (Bradford et al., 2021). The single sightings in 2002 and 2010 included groups of 89 (Baird, 2006) and 153 melon-headed whales (Bradford et al., 2013a), respectively, and the mean group size in 2017 was 187.9 animals (Bradford et al., 2021).

A year-round, non-hierarchical Small and Resident Population BIA has been delineated for melon-headed whales off the Island of Hawaii (Kratofil et al., 2023) (Figure K-12). The BIA was updated from the original BIA (Baird et al., 2015a) based on additional analyses and encompasses 3,816 km^2 off the northwest coast of the Island of Hawaii (Kratofil et al., 2023).

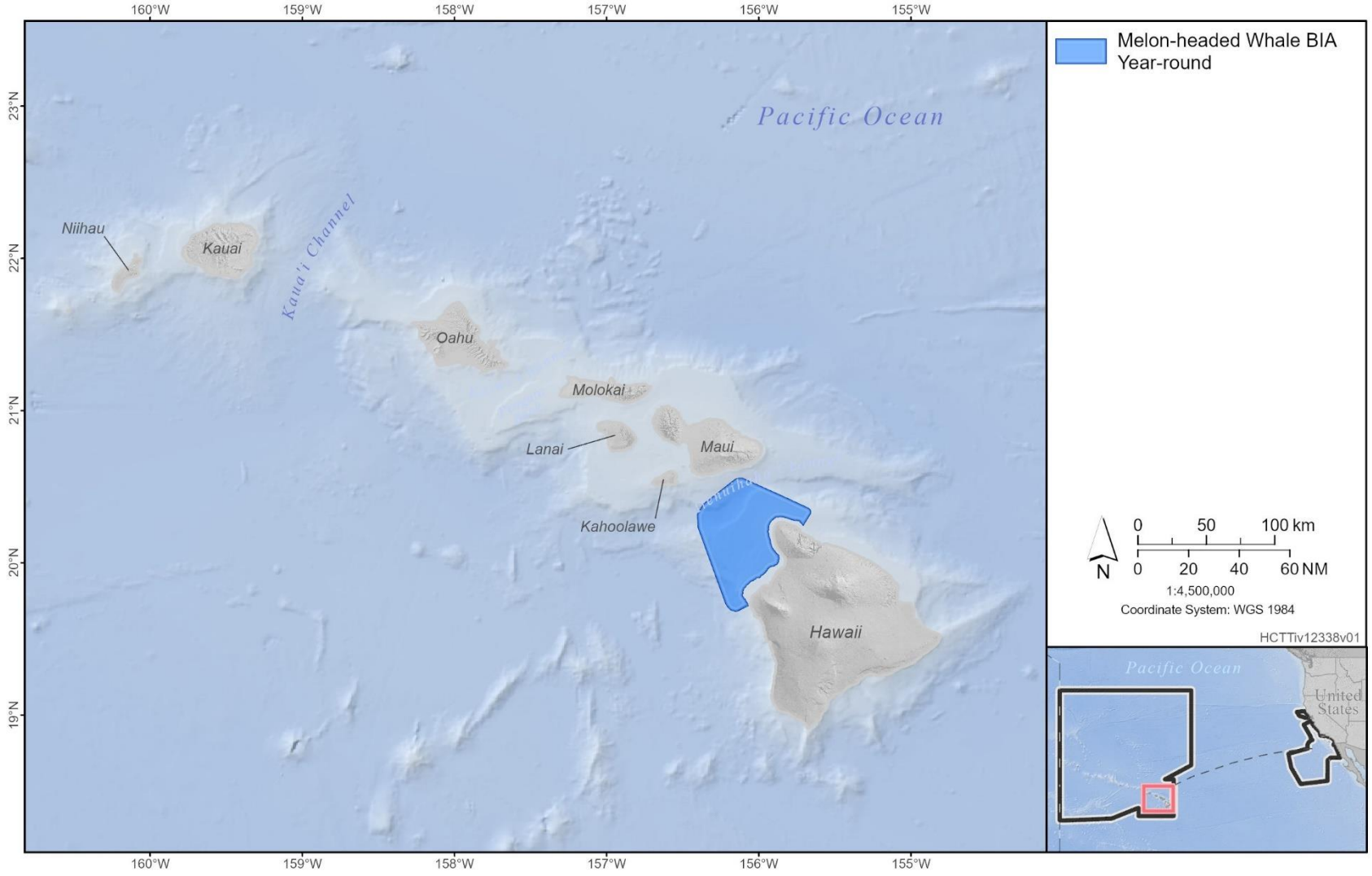


Figure K-12: Melon-Headed Whale Small and Resident BIA Off Hawaii

K.3.6.2 Stressor Analysis

K.3.6.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting melon-headed whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 51 percent of effects are predicted to occur in Hawaii Range Complex during the cold season, and 45 percent would occur in the warm season for the Hawaiian Islands stock. The remaining four percent would occur on the high seas, split evenly between the cold and warm seasons. Ninety-nine percent of the behavioral, 99 percent of the temporary threshold shift, and 77 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIA, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

For the Kohala Resident stock, 77 percent of effects are predicted to occur in Hawaii Range Complex during the warm season, and 23 percent would occur in the cold season. Ninety-eight percent of the behavioral and 93 percent of the temporary threshold shift takes would result from training and testing activities involving sonar.

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only one take (behavioral) resulting from testing activities involving air guns is predicted to occur to the Hawaiian Islands stock and no effects from air guns are predicted for the Kohala Resident stock.

On average, individuals in the Hawaiian Islands stock and the Kohala Resident stock would be impacted less than once per year. The average individual risk of injurious effects in both populations is negligible. No auditory or non-auditory injuries are predicted for the Kohala Resident stock, but a small number of auditory injuries could occur to individuals in the Hawaiian Islands stock. However, the risk of an auditory injury in Hawaii from explosive testing is low (less than one) in any year, but a single auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of receiving an auditory injury from explosive testing activities is unlikely for melon-headed whales in the Hawaiian Islands stock. The risk of injury may be reduced through activity-based mitigation especially since melon-headed whales tend to travel in large groups.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who experience auditory injury may incur energetic costs. Based on the above analysis, long-term consequences for the Hawaiian Islands and Kohala resident stocks of melon-headed whales are unlikely.

K.3.6.3 Action Proponent Requirements for Area-Specific Training and Testing

The Alenuihaha Channel, as well as the waters north and west of Hawaii Island, provides a unique training capability that does not exist elsewhere in the Hawaii Range Complex. The Alenuihaha Channel is an ideal location for strait transits using mid-frequency active sonar during training. The Alenuihaha

Channel is an actual channel that provides a vital and realistic analog for similar straits or restricted maneuvering areas where the Action Proponents operate worldwide, such as the East or South China seas. For example, transit training in the Alenuihaha Channel replicates these types of strait environments that meet the Navy's requirement to deploy Naval forces to ensure the free flow of commerce and the freedom of navigation by combatting piracy or mine threats. Naval forces are required to train to counter a submarine threat before deployment, to ensure such forces obtain the required proficiency to conduct anti-submarine warfare in a controlled and observed environment prior to deployment to international straits across the globe, where operational Commanders require Naval forces to be able to conduct a range of military operations, including anti-submarine warfare. This required proficiency cannot be replicated by simulation and is most effectively obtained when conducted in a strait. Commanding Officers cannot be expected to effectively conduct such operations in a deployed environment if the first time they encounter a submarine in a strait is in a deployed setting. There are few geographic areas that enable forces to do this type of training outside of the HCTT Study Area.

While there are other channels within the Hawaii Range Complex used for strait transit training and anti-submarine warfare training, none provide the important attributes of the Alenuihaha Channel. The Alenuihaha Channel's proximity to the Pohakuloa Training Area allows for realistic training and reduces time and fuel costs between these training areas. The channel between Niihau and Kauai is also acceptable from a training perspective, but this would add at least two days of transit during each Under Sea Warfare training exercise (time required to move through a different channel and reposition to operating areas near Pohakuloa Training Area). The Kaiwi Channel between Oahu and Molokai is also acceptable from some mid-frequency active sonar training perspective, but it is also a significant civilian air corridor and raises safety concerns for anti-submarine warfare aircraft flying in that channel. In addition, the channel between Nihau and Kauai is proximate to the PMRF instrumented range) which would result in problems de-conflicting multiple activities and hazardous operations, raising safety concerns. For these reasons, Alenuihaha Channel is still the most suitable for anti-submarine warfare training during certain training scenarios. The Hawaii Island Melon-headed Whale Small and Resident Population Area is adjacent to waters approaching Kawaihae Harbor, the point of amphibious insertion for forces proceeding to the range at Pohakuloa Training Area, which is the only range in the Hawaii Range Complex that supports ground force and aviation live-fire training. Training in this area allows for the integration of carrier strike group operations and amphibious landings, working in conjunction within a controlled airspace west of Hawaii Island for military training near the Pohakuloa Training Area range. Carrier strike group training can include a full spectrum of the force–various ships, submarines, aircraft, and Marine Corps forces—to train in the complex command, control operational coordination, and logistics functions designed to prepare forces for deployment. As an air to ground range, Pohakuloa Training Area supports carrier strike group activities near a channel and near large open water areas for strike group maneuvering and submarine activities. Mid-frequency active sonar conducted to support strike maneuver and protect high value units (e.g., carrier) as aircraft go to strike at Pohakuloa Training Area is vital.

Access to both the Alenuihaha Channel and the waters west of Kawaihae Harbor is vital for a broad spectrum of naval and amphibious training. These areas provide a unique and irreplaceable capability within the Hawaii Range Complex that allows naval forces to conduct realistic, integrated training in an environment that replicates the actual areas where they will be called to serve.

K.3.6.4 Hawaii Island Melon-Headed Whale Small and Resident Population Area Mitigation Assessment

The Action Proponents have been training and testing in the Hawaiian Islands with the same basic systems for over 40 years and there is no evidence of any adverse effects having occurred, and there are multiple lines of evidence demonstrating the population's high site fidelity to the area. As discussed in Section K.3.6.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to melon-headed whales that would occur in the Hawaii Range Complex are from training and testing activities involving sonar during both the cold and warm seasons. Most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals.

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for melon-headed whales and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area) which overlaps all of the revised small and resident population area (Figure K-26). While this mitigation area is designed to provide additional protection for false killer whales and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including melon-headed whales without compromising military readiness. The Action Proponents will continue to implement this existing mitigation areas to the benefit of melon-headed whales present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised Hawaii Island melon-headed whale BIAs are not being proposed.

K.3.7 Common Bottlenose Dolphins Small and Resident Population Areas: Hawaiian Islands Stock Complex

K.3.7.1 Biological Considerations Applicable to all Common Bottlenose Dolphins Small and Resident Population Areas

NMFS recognizes five stocks of common bottlenose dolphins that occur in the Hawaii Study Area: the Kauai and Niihau, Oahu, Maui Nui, Hawaii Island, and the Hawaii Pelagic stock (Carretta et al., 2024). None of these stocks are listed under the ESA.

Common bottlenose dolphins occur throughout the Hawaiian Islands, and they are typically observed throughout the main islands and from the Island of Hawaii to Kure Atoll (Baird et al., 2013a; Shallenberger, 1981). In the Hawaiian Islands, this species is found in both shallow coastal waters and deep offshore waters (Baird et al., 2003b; Barlow et al., 2008; Bradford et al., 2013a; Mobley et al., 2000). The offshore variety is typically larger than the inshore. Photo-identification and genetics indicate the presence of island associated populations of bottlenose dolphins in the Hawaiian Islands (Martien et al., 2012). During three systematic surveys of the Hawaiian Islands EEZ in 2002, 2010, and 2017, there were a total of 38 sightings of bottlenose dolphins, of which 27 groups were identified as members of the Hawaii pelagic stock and the rest identified as members of one of the four island-associated stocks (Bradford et al., 2021). Habitat-based models developed from systematic ship survey data collected in the central North Pacific show some of the highest common bottlenose dolphin densities around the Hawaiian Islands (Becker et al., 2012b; Forney et al., 2015). More recently, habitat-based density models were developed using systematic survey data collected within waters of the Hawaiian Islands EEZ from 2000 to 2020 using only those common bottlenose dolphin sightings identified as members of the

Hawaii pelagic stock (Becker et al., 2022a). Model predictions showed a strong island association for the pelagic stock, with highest densities occurring near all the islands within the EEZ.

Five year-round Small and Resident Population BIAs (a parent BIA, three child BIAs, and one non-hierarchical BIA) have been delineated in the main Hawaiian Islands for the populations of common bottlenose dolphins (Kratofil et al., 2023) (Figure K-13). The BIAs were updated from the original BIAs (Baird et al., 2015a) based on additional analyses. The parent BIA encompasses 36,634 km^2 of waters surrounding Niihau to the west and extending east to surround the island of Maui. The child BIAs encompass 2,772 km^2 around Kauai/Niihau, 8,487 km^2 around Oahu, and 10,622 km^2 around Maui Nui. In addition, a year-round non-hierarchical Small and Resident Population BIA was delineated and encompasses 8,299 km^2 around the Island of Hawaii (Kratofil et al., 2023) (Figure K-13).

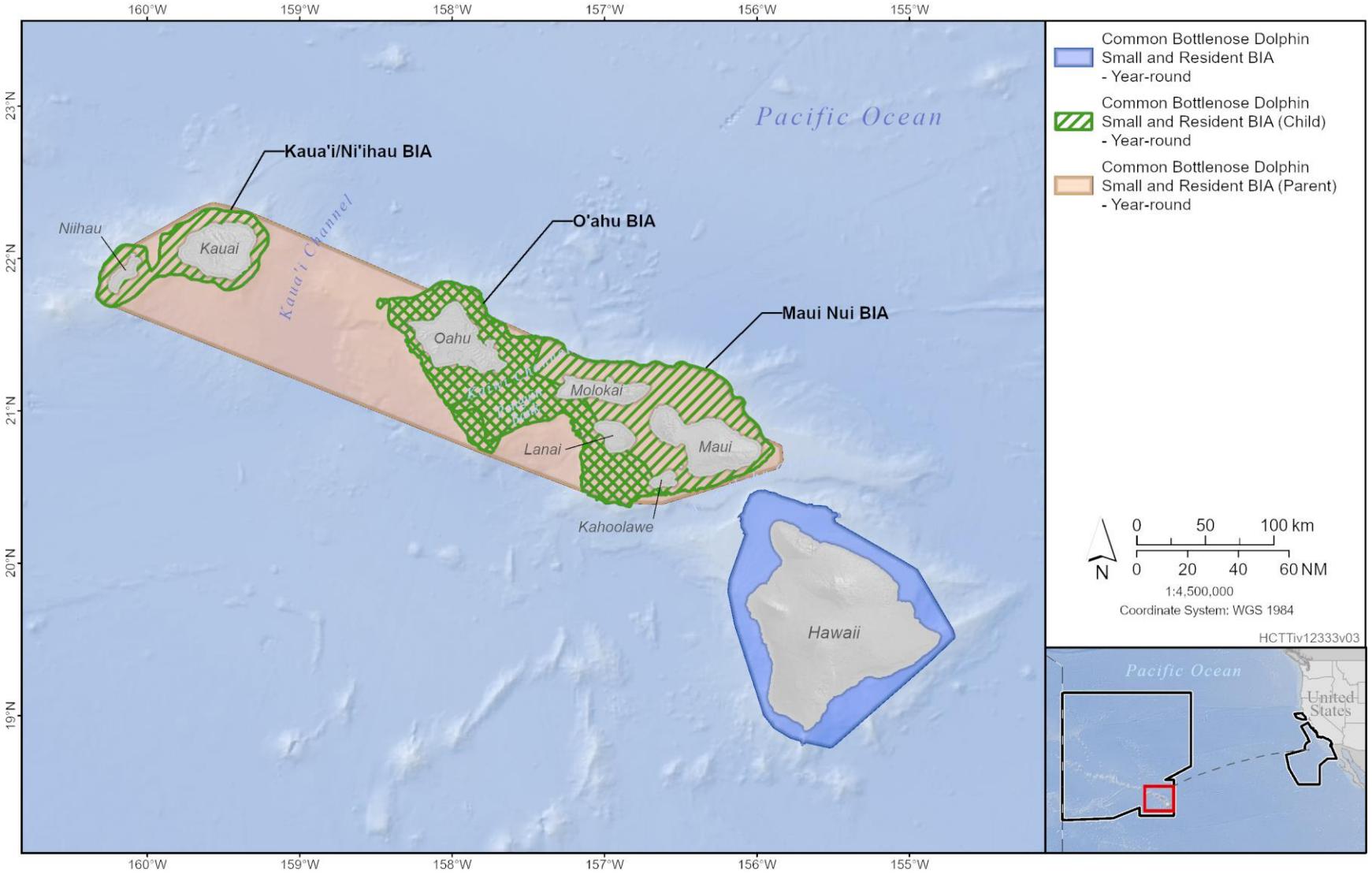


Figure K-13: Common Bottlenose Dolphin Small and Resident BIAs Off the Hawaiian Islands

K.3.7.2 Stressor Analysis

K.3.7.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting common bottlenose dolphins. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, the percent of effects that are predicted to occur in Hawaii Range Complex to the Oahu, Maui Nui, Hawaii Pelagic, and Kauai and Niihau stocks are split relatively evenly between the cold and warm seasons. For the Hawaii Island stock, 80 percent of the effects that are predicted to occur in the Hawaii Range Complex would occur during the cold season and 20 percent would occur during the warm season. Table K-5 provides a breakout of the percentage of takes that would result from training and testing activities involving sonar for each of the five stocks. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Table K-5: Common Bottlenose Dolphin Percent of Behavioral, Temporary Threshold Shift, and Auditory Injury Takes by Stock

Stock	Percent of Behavioral Takes	Percent of Temporary Threshold Shift Takes	Percent of Auditory Injury Takes
Oahu	99%	82%	20%
Maui Nui	99%	82%	100%
Hawaii Island	100%	75%	N/A
Hawaii Pelagic	99%	98%	17%
Kauai and Niihau	100%	99%	0%

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only the Hawaii Pelagic stock has predicted takes resulting from testing activities involving air guns, however effects would be limited to one behavioral take annually.

On average, individuals in the Oahu stock would be impacted over 60 times per year, although most of these effects would be behavioral. A small number of auditory and non-auditory injuries could occur to individuals in Oahu, although the average risk of injurious effects to individuals is negligible. The risk of a non-auditory injury or mortality from this activity is low (less than one) in any year for this stock, but a single non-auditory injury and mortality are shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of any non-auditory injury or mortality is unlikely for bottlenose dolphins in Oahu. The risk of injury or mortality may be reduced through activity-based mitigation.

On average, individuals in the Maui Nui stock and Kauai Niihau stock could be impacted several times per year, individuals in the Hawaii Pelagic stock would be impacted less than twice per year, and individuals in the Hawaii Island stock could be impacted less than once per year. There are no annual injuries predicted in the Maui Nui stock, Kauai Niihau stock, or the Hawaii Island stock. The average individual risk of injury is negligible in all four stocks, but a small number of injuries and one mortality could occur in the Hawaii Pelagic stock. For the Hawaii Pelagic stock, the risk of mortality is low (less than one) in any year, but a single mortality is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of a mortality is unlikely for the Hawaii Pelagic stock. The risk of injury or mortality may be reduced through activity-based mitigation, as bottlenose dolphins have relatively higher sightability.

Several instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who suffer a slight recoverable injury or an auditory injury may experience minor energetic costs. Because bottlenose dolphins are resilient to limited instances of disturbance, long-term consequences are unlikely for any stock in the Hawaii Study Area.

K.3.7.3 Action Proponent Requirements for Area-Specific Training and Testing

The main common bottlenose dolphin small and resident BIAs encompass waters around the islands of Hawaii, Oahu, Kauai, Maui, Molokai, Lanai, Kahoolawe, and Niihau within the Hawaii Study Area. These waters encompass many of the primary training sites within the Hawaii Range Complex. Spatially, common bottlenose dolphins may be present anywhere within the waters surrounding the Hawaiian Islands. Temporally, all stocks of the species in the Hawaii Study Area are present throughout the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Pearl Harbor, HI.

The training and testing areas encompassed by the common bottlenose dolphin small and resident BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Pacific Range Missile Facility, shallow water training range and barking sands tactical underwater range west of Kauai, Ewa training minefield and Puuloa underwater range south of Oahu, the Kahoolawe sub training minefield, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

K.3.7.4 Common Bottlenose Dolphins Small and Resident Population Area Mitigation Considerations

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for common bottlenose dolphins and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which overlap some of the revised small and resident population areas (Figure K-26). While these mitigation areas are designed to provide additional protection for humpback whales, false killer whales, and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including common bottlenose dolphins without compromising military readiness. The Navy will continue to implement this existing

mitigation area to the benefit of common bottlenose dolphins present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised common bottlenose dolphin BIAs are not being proposed.

K.3.8 Pantropical Spotted Dolphins Small and Resident Population Areas

K.3.8.1 Biological Considerations Applicable to all Pantropical Spotted Dolphin Small and Resident Population Areas

NMFS recognizes four stocks of pantropical spotted dolphins within the Hawaiian Islands Exclusive Economic Zone: the Oahu; Maui Nui; Hawaii island; and Hawaii Pelagic stocks. None of the stocks are listed under the ESA.

Based on sightings during small boat surveys from 2000 to 2012 in the main Hawaiian Islands, pantropical spotted dolphins were the most abundant species of cetacean, although they were frequently observed leaping out of the water which likely increased their detectability (Baird et al., 2013a). This species was also one of the most abundant based on analyses of line-transect data collected in the Hawaiian Exclusive Economic Zone in 2002, 2010, and 2017, with a total of 39 sightings during the three surveys (Barlow, 2006; Bradford et al., 2013a; Bradford et al., 2021). Known habitat preferences and sighting data indicate the primary occurrence for the pantropical spotted dolphin in Hawaiian waters is shallow coastal waters to depths of 5,000 m, although the peak sighting rates occur in depths from 1,500 to 3,500 m (Baird et al., 2013c; Bradford et al., 2013a; Oleson et al., 2013a). Habitat-based models developed from systematic ship survey data collected in the central North Pacific show relatively high pantropical spotted dolphin densities around the Hawaiian Islands, particularly around the Main Hawaiian Islands (Becker et al., 2012a; Forney et al., 2015). More recently, sighting data from systematic ship surveys conducted in waters of the Hawaiian Islands EEZ from 2000 to 2020 allowed for the development of separate habitat models for the pelagic and combined insular stocks of pantropical spotted dolphins (Becker et al., 2022a). Consistent with past observations (Baird et al., 2013c; Bradford et al., 2013a; Oleson et al., 2013a), the model for the combined insular stocks showed peak abundance in depths from 1,500 to 3,500 m. The habitat model for the pelagic stock predicted low to mid-range density estimates for offshore waters of the Hawaiian Islands EEZ, with highest densities near all the islands, but particularly around the Main Hawaiian Islands (Becker et al., 2022a).

A year-round Small and Resident Population parent BIA and three child BIAs have been delineated in the main Hawaiian Islands for the populations of Pantropical spotted dolphins (Kratofil et al., 2023) (Figure K-14). The BIAs were updated from the original BIAs (Baird et al., 2015a) based on additional analyses. The parent BIA encompasses 57,711 km^2 of waters surrounding Oahu, Maui Nui, and the Island of Hawaii. The child BIAs encompass 12,952 km^2 around Oahu, 6,743 km^2 around Maui Nui, and 10,768 km^2 around the Island of Hawaii (Kratofil et al., 2023).

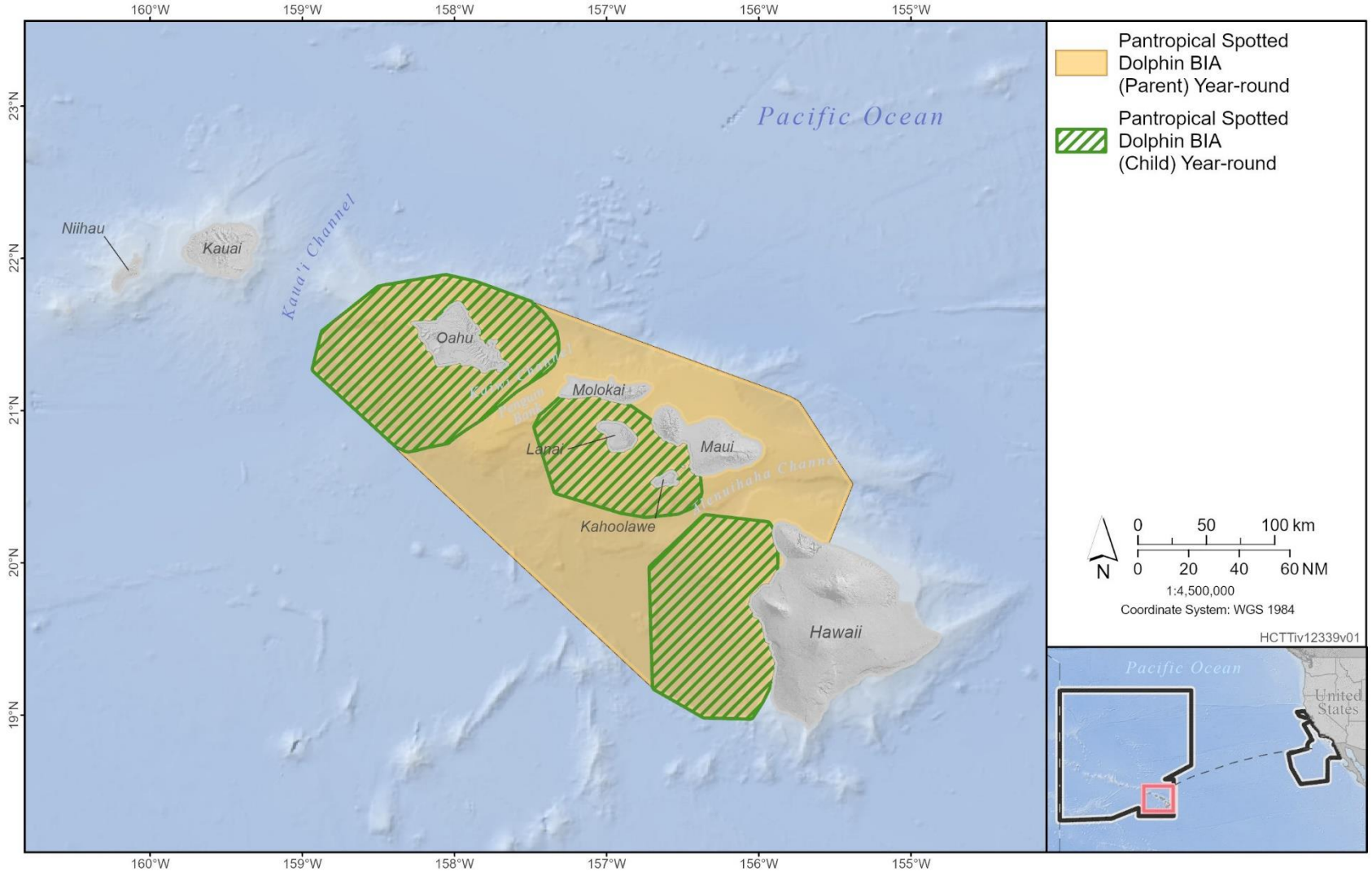


Figure K-14: Pantropical Spotted Dolphin Small and Resident BIAs Off the Hawaiian Islands

K.3.8.2 Stressor Analysis

K.3.8.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting pantropical spotted dolphins. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, the percent of effects that are predicted to occur in Hawaii Range Complex to the Oahu, Maui Nui, Hawaii Island, and Hawaii Pelagic stocks are split relatively evenly between the cold and warm seasons. Table K-6 provides a breakout of the percentage of takes that would result from training and testing activities involving sonar for each of the four stocks. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Table K-6: Pantropical Spotted Dolphin Percent of Behavioral, Temporary Threshold Shift, and Auditory Injury Takes by Stock

Stock	Percent of Behavioral Takes	Percent of Temporary Threshold Shift Takes	Percent of Auditory Injury Takes
Oahu	99%	91%	40%
Maui Nui	99%	94%	25%
Hawaii Island	99%	99%	50%
Hawaii Pelagic	99%	99%	69%

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only the Hawaii Island and Hawaii Pelagic stocks have predicted takes resulting from testing activities involving air guns, however effects would be limited to one behavioral take annually per stock.

On average, individuals in the Oahu stock could be impacted several times per year, and individuals in the Maui Nui stock, the Hawaii Island stock, and the Hawaii Pelagic stock would be impacted less than once per year. The average individual risk of injury is negligible in all four stocks, but a small number of injuries could occur to individuals in any of the four stocks of pantropical spotted dolphins in the Hawaii Study Area. In addition, one or two mortalities could occur to individuals in the Hawaii Pelagic stock. However, the risk of a mortality from explosive testing and training is low (less than one) in any year, but single mortalities are shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of any mortality is unlikely for all stocks pantropical spotted dolphins in the HCTT Study Area. Similarly, the risk of non-auditory injuries is low (less than one) in any year, but single non-auditory injuries are shown in the maximum year of effects due to summing risk across seven years and following the rounding approach

discussed above. The risk of injury and mortality may be reduced through activity-based mitigation, especially since Pantropical spotted dolphins tend to travel in large groups.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who experience auditory or non-auditory injury may incur energetic costs. The risk of mortality is extremely unlikely. Based on the above analysis, long-term consequences for the Maui Nui stock, the Hawaii Island stock, the Hawaii Pelagic stock, and the Oahu stock of Pantropical spotted dolphins are unlikely.

K.3.8.3 Action Proponent Requirements for Area-Specific Training and Testing

The pantropical spotted dolphin small and resident BIAs encompass waters around the islands of Hawaii, Oahu, Maui, Molokai, Lanai, and Kahoolawe within the Hawaii Study Area. These waters encompass many of the primary training sites within the Hawaii Range Complex. Spatially, pantropical spotted dolphins may be present anywhere within the waters off surrounding the Hawaiian Islands. Temporally, all stocks of the species in the Hawaii Study Area are present throughout the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The training and testing areas encompassed by the pantropical spotted dolphin small and resident BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Shipboard Electronic Systems Evaluation Facility and a small portion of the Fleet Operational Readiness Accuracy Check Site Range west of Oahu, waters approaching Kawaihae Harbor, Ewa training minefield and Puuloa underwater range south of Oahu, the Kahoolawe sub training minefield, waters approaching Kawaihae Harbor, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

K.3.8.4 Pantropical Spotted Dolphins Small and Resident Population Area Mitigation Considerations

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for pantropical spotted dolphins and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Marine Mammal Mitigation Area, (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which, as shown in Figure K-26, both overlap some of the revised small and resident population child BIAs. While these mitigation areas were designed to provide additional protection for humpback whales, false killer whales, and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including pantropical spotted dolphins, without compromising military readiness. The Navy will continue to implement these existing mitigation areas to the benefit of pantropical spotted dolphins present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised pantropical spotted dolphin child BIAs are not being proposed.

K.3.9 Spinner Dolphins Small and Resident Population Areas: Hawaiian Islands Stock Complex

K.3.9.1 Biological Considerations Applicable to all Spinner Dolphin Small and Resident Population Areas

NMFS recognizes six stocks of spinner dolphins within the Hawaii Study Area: the Hawaii Island, Oahu/4-Islands, Kauai and Niihau, Hawaii Pelagic, Kure and Midway, and the Pearl and Hermes Reef stocks (Carretta et al., 2023).

In the Hawaiian Islands, spinner dolphins occur along the leeward coasts of all the major islands and around several of the atolls northwest of the main Hawaiian Islands. Spinner dolphins occur year-round throughout the Hawaiian Islands, with primary occurrence from the shore to 4,000 m depth. This considers nearshore resting habitat and offshore feeding areas. Spinner dolphins are expected to occur in shallow water resting areas (about 50 m deep or less) throughout the middle of the day, moving into deep waters offshore during the night to feed (Heenehan et al., 2016; Heenehan et al., 2017; Norris & Dohl, 1980). Some of these resting areas are in proximity to bathymetric features that result in localized concentration of spinner dolphin prey. For example, there is an escarpment off Hawaii Island's Keahole Point that produces a locally enriched area that spinner dolphins exploit during nightly foraging trips from the nearby Makeko Bay (Heenehan et al., 2017; Norris & Dohl, 1980). Primary resting areas are along the west side of Hawaii, including Makako Bay, Honokohau Bay, Kailua Bay, Kealakekua Bay, Honaunau Bay, and Kauhako Bay, and off Kahena on the southeast side of the island (Heenehan et al., 2016; Heenehan et al., 2017; Norris & Dohl, 1980; Ostman-Lind et al., 2004; Tyne et al., 2017; Tyne et al., 2015). Along the Waianae coast of Oahu, Hawaii, spinner dolphins rest along Makua Beach, Kahe Point, and Pokai Bay during the day (Lammers, 2004). Kilauea Bay on Kauai is also a popular resting areas for Hawaiian spinner dolphins (U.S. Department of the Navy, 2006). Monitoring for the Rim of the Pacific Exercise in 2006 resulted in daily sightings of spinner dolphins within the offshore area of Kekaha Beach, Kauai, near the PMRF (U.S. Department of the Navy, 2006). Spinner dolphins have been observed during Navy monitoring surveys at Kaula Island in 2000, 2003, and 2009–2011 (Richie et al., 2012). Although sightings have been recorded around the mouth of Pearl Harbor, Hawaii, spinner dolphin occurrence is rare there (Lammers, 2004; Richie et al., 2016). Occurrence patterns are assumed to be the same throughout the year.

During three systematic ship surveys of waters within the Hawaiian Islands EEZ in summer/fall of 2002, 2010, and 2017, there was a total of 15 sightings of spinner dolphin, the majority from the pelagic stock (Bradford et al., 2021). Habitat-based models developed from systematic ship survey data collected in the central North Pacific show the strong island association of spinner dolphins (Becker et al., 2012b; Forney et al., 2015), consistent with previously documented distribution patterns (Barlow, 2006).

Five year-round, non-hierarchical Small and Resident Population BIAs have been delineated for spinner dolphins in Hawaiian waters (Kratofil et al., 2023) (Figure K-15). The BIAs were based on the current insular stock boundaries and include Kuaihelani/Holaniku (4,841 km^2), Manawai (2,094 km^2), Kauai/Niihau (7,233 km^2), Oahu/Maui Nui (14,651 km^2), and the Island of Hawaii (9,477 km^2).

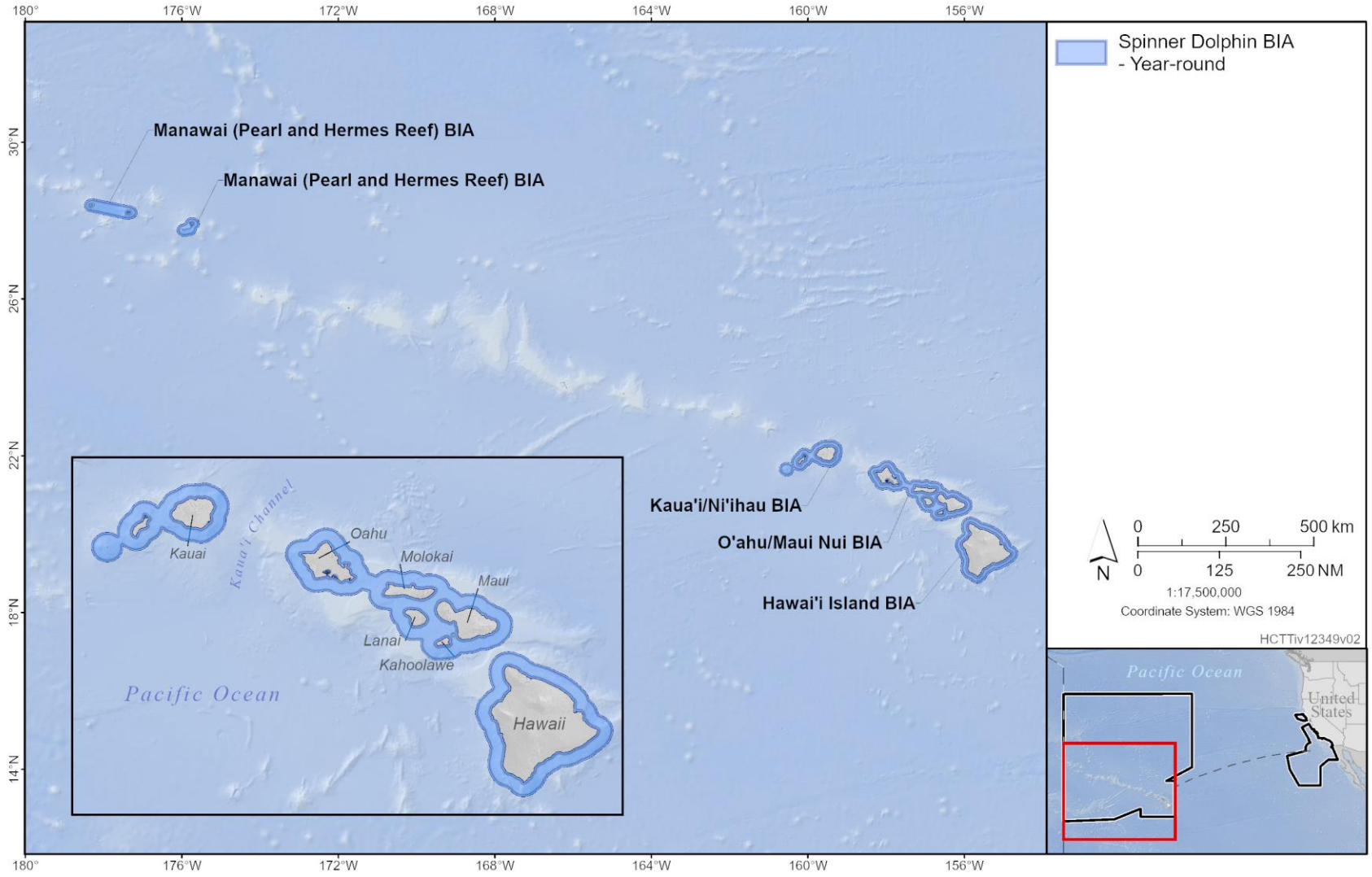


Figure K-15: Spinner Dolphin Small and Resident BIA Off the Hawaiian Islands

K.3.9.2 Stressor Analysis

K.3.9.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting spinner dolphins. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, there are no predicted effects to the Kure and Midway or the Pearl and Hermes Reef stocks. The percent of effects that are predicted to occur in Hawaii Range Complex to the Hawaii Island and Oahu/4-islands stocks is split with approximately 60 percent occurring during the warm season and 40 percent occurring during the cold season. For the Hawaii Pelagic and the Kauai and Niihau stocks, a greater percentage of the effects predicted to occur in the Hawaii Range Complex (65 percent for the Kauai and Niihau stock, and 52 percent for the Hawaii Pelagic stock) would occur during the cold season. Table K-7 provides a breakout of the percentage of takes that would result from training and testing activities involving sonar for each of the four stocks. For the quantitative analysis of effects to the species within the revised BIA, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Table K-7: Spinner Dolphin Percent of Behavioral, Temporary Threshold Shift, and Auditory Injury Takes by Stock

Stock	Percent of Behavioral Takes	Percent of Temporary Threshold Shift Takes	Percent of Auditory Injury Takes
Oahu/4-Islands	99%	91%	1%
Kauai and Niihau	99%	99%	50%
Hawaii Island	98%	98%	0%
Hawaii Pelagic	99%	99%	99%

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. None of the four stocks have predicted takes resulting from testing activities involving air guns.

On average, individuals in the Hawaii Island stock and Hawaii Pelagic stock would be impacted less than once per year, and individuals in the Kauai and Niihau stock and the Oahu/ 4-Islands stock could be impacted several times per year. The average individual risk of injury is negligible in all four stocks, but a small number of auditory injuries could occur. However, in four out of six instances of auditory injury, the risk of an injury is low (less than one) in any year, but single injuries are shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of any auditory injury from an explosive activity is unlikely for all stocks of spinner dolphins in the HCTT Study Area, and the risk of an auditory injury from

sonar testing is unlikely for spinner dolphins in the Hawaii pelagic stock. The risk of injury may be reduced through activity-based mitigation, as spinner dolphins have relatively higher sightability.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who experience auditory injury may incur energetic costs. Based on the above analysis, long-term consequences for the Hawaii Island stock, Hawaii Pelagic stock, the Kauai and Niihau stock, and the Oahu/ 4-Islands stock of spinner dolphins are unlikely.

K.3.9.3 Action Proponent Requirements for Area-Specific Training and Testing

The Manawai small and resident BIAs are in the Hawaii Temporary OPAREA, which is composed of 2.1 million NM^2 of sea and airspace north and west of Kauai used predominately for research, development and test activities. It is mostly used for missile defense testing, which is not a part of the Proposed Action. Activities in the Temporary OPAREA that are covered in this EIS/OEIS may include air, surface, and anti-submarine warfare activities. The training and testing activities that typically occur within the area include opportunistic training by individual ships transiting to and from the Western Pacific on deployment or occasional positioning of ships supporting testing or other events and are likely to occur in deeper waters of the large temporary operating area and would not overlap with the small and resident population area.

The Kauai/Niihau, Oahu/Maui Nui, and Hawaii Island small and resident BIAs encompass waters around the islands of Hawaii, Oahu, Kauai, Maui, Molokai, Lanai, Kahoolawe, and Niihau within the Hawaii Study Area. These waters encompass many of the primary training sites within the Hawaii Range Complex. Spatially, spinner dolphins may be present anywhere within the waters off surrounding the Hawaiian Islands. Temporally, spinner dolphins are present most of the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The training and testing areas encompassed by the spinner dolphin small and resident BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Pacific Range Missile Facility, shallow water training range and barking sands tactical underwater range west of Kauai, Ewa training minefield and Puuloa underwater range south of Oahu, the Kahoolawe sub training minefield, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

K.3.9.4 Spinner Dolphin Small and Resident Population Areas Mitigation Assessment

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for spinner dolphins and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Marine Mammal Mitigation Area, (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which, as shown in Figure K-26, both overlap some of the revised small and resident population area. While these mitigation areas were designed to provide additional protection for humpback whales, false killer whales, and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including spinner dolphins, without compromising military readiness. The Navy will continue to implement these existing mitigation areas to the benefit of spinner dolphins present in the Hawaii Study Area. However, because

most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised spinner dolphin BIAs are not being proposed.

K.3.10 Hawaii Island Rough-Toothed Dolphins Small and Resident Population Area

K.3.10.1 Biological Considerations Applicable to the Rough-toothed Dolphins Small and Resident Population Area

Rough-toothed dolphins are among the most widely distributed species of tropical dolphins, and NMFS recognizes one stock of rough-toothed dolphins found within the U.S. Exclusive Economic Zone of the Hawaiian Islands: Hawaii stock (Carretta et al., 2023). Rough-toothed dolphins are not listed under the ESA.

Rough-toothed dolphins are well known in deep ocean waters off the Hawaiian Islands but are also seen relatively frequently during nearshore surveys (Baird et al., 2015c; Baird et al., 2008; Barlow et al., 2008; Bradford et al., 2013a; Carretta et al., 2015; Pitman & Stinchcomb, 2002; Shallenberger, 1981; Webster et al., 2015). During three systematic ship surveys of waters within the Hawaiian Islands EEZ in summer/fall of 2002, 2010, and 2017, there was a total of 67 sightings of rough-toothed dolphin, with yearly mean group size estimates ranging from 15.7 to 25.3 animals (Bradford et al., 2021). Based on density estimates derived from these survey data, rough-toothed dolphin was one of the most abundant species present in the study area in each of the three years. Habitat-based models developed from systematic ship survey data collected in the central North Pacific show the strong island association of rough-toothed dolphins (Becker et al., 2012b; Forney et al., 2015). Sighting data from systematic ship surveys conducted within waters of the Hawaiian Islands EEZ from 2000 to 2020 supported the development of an updated habitat-based density model for rough-toothed dolphin and confirmed the strong island association indicated from the previous models (Becker et al., 2022a). Over a 10-day near-shore survey effort off Kauai in 2014, rough-toothed dolphins were encountered on two occasions and 7 of the 8 individuals photo-identified had been observed in previous years (Baird et al., 2015b). Data from 14 satellite tags deployed off Kauai between 2011 and 2015 on rough-toothed dolphins indicated a large portion of the core area for those animals overlaps the PMRF range and the channel between Kauai and Niihau (Baird et al., 2015b). The data presented by Baird et al. (2015b) and Webster et al. (2015) are indicative of residency on or near the PMRF range by some of those animals; see also Baird et al. (2008).

A year-round Small and Resident Population parent BIA and child BIA have been delineated for waters off Kauai, Niihau, and Oahu for rough-toothed dolphins (Kratofil et al., 2023) (Figure K-16). A BIA was not identified for this population in the original BIA effort because there were insufficient data available at that time (Baird et al., 2015a). The parent BIA encompasses 25,083 km^2 of waters extending from the west coast of Oahu to the northwest and surrounding both Kauai and Niihau. The child BIA encompass 1,098 km^2 off the west coast of Kauai to capture the core range for this population (Kratofil et al., 2023). In addition, a year-round, non-hierarchical BIA was delineated for rough-toothed dolphins associated with Maui Nui and the Island of Hawaii. This BIA encompasses 15,112 km^2 of waters from the west coast of the Island of Hawaii, extending north to encompass waters off Maui Nui (Kratofil et al., 2023) (Figure K-16).

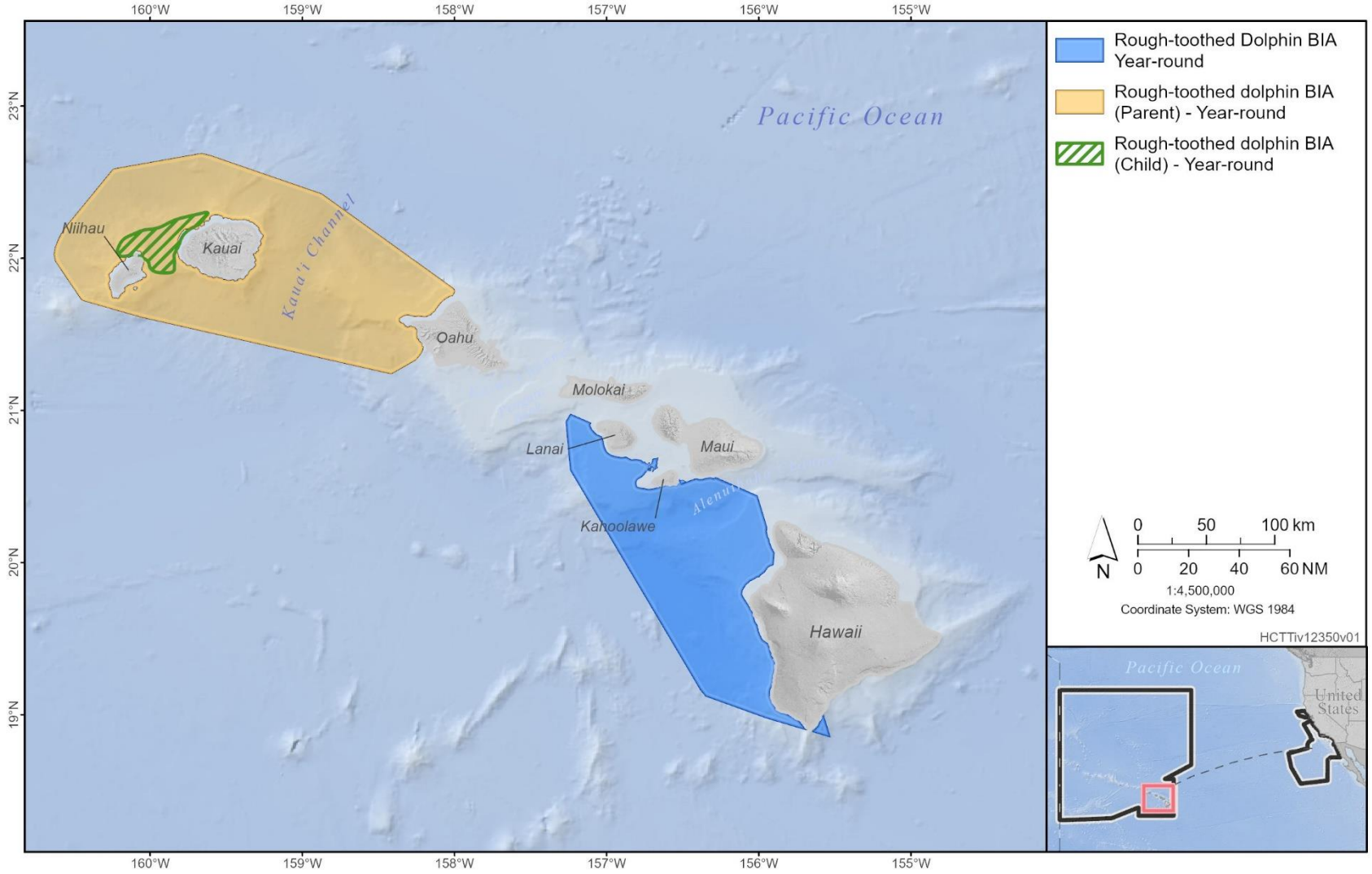


Figure K-16: Rough-Toothed Dolphin Small and Resident BIAs Off the Hawaiian Islands

K.3.10.2 Stressor Analysis

K.3.10.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting rough-toothed dolphins. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, the effects that are predicted to occur in Hawaii Range Complex to the Hawaii stock of rough-toothed dolphins present in the waters surrounding the Hawaiian Islands are distributed relatively evenly between the cold and warm seasons. Ninety-nine percent of the behavioral, 99 percent of the temporary threshold shift, and 68 percent of the auditory injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only one take (behavioral) is predicted to occur from the training and testing activities involving air guns to rough-toothed dolphins annually in the Hawaii Study Area.

On average, individuals would be impacted less than once per year. A small number of auditory and non-auditory injuries could occur to individuals, although the average individual risk of injury is negligible. In addition, a mortality could occur from explosive testing and training activities. However, the risk of a single mortality from either activity is low (less than one) in any year, but a mortality for both explosive activities is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of any mortality is unlikely for rough-toothed dolphins in the HCTT Study Area. The risk of injury may be reduced through activity-based mitigation, as rough-toothed dolphins are moderately sightable.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who experience injury may incur energetic costs. The risk of mortality is extremely unlikely. Based on the above analysis, long-term consequences for the Hawaii stock of rough-toothed dolphins are unlikely.

K.3.10.3 Action Proponent Requirements for Area-Specific Training and Testing

The rough-toothed dolphin small and resident BIAs encompass waters in the vicinity of the islands of Hawaii, Oahu, Kauai, Maui, Lanai, Kahoolawe, and Niihau within the Hawaii Study Area. These waters encompass many of the primary training sites within the Hawaii Range Complex. Spatially, rough-toothed dolphins may be present anywhere within the waters off surrounding the Hawaiian Islands. Temporally, all stocks of the species in the Hawaii Study Area are present throughout the year.

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like Oahu, HI.

The training and testing areas encompassed by the rough-toothed dolphin small and resident BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Hawaii and are not available elsewhere. They include the following: Pacific Range Missile Facility, shallow water training range and barking sands tactical underwater range west of Kauai, the Kahoolawe sub training minefield, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

K.3.10.4 Rough-toothed Dolphin Small and Resident Population Area Mitigation Assessment

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for rough-toothed dolphins and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area and the Hawaii 4-Islands Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which, as shown in Figure K-26, both overlap some of the revised rough-toothed dolphin small and resident population areas. While these mitigation areas were designed to provide additional protection for humpback whales, false killer whales, and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including rough-toothed dolphins without compromising military readiness. The Navy will continue to implement these existing mitigation areas to the benefit of rough-toothed dolphins present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised Hawaii Island rough-toothed dolphin BIAs are not being proposed.

K.3.11 Hawaii Island Cuvier's Beaked Whale Small and Resident Population Area

K.3.11.1 Biological Considerations Applicable to the Cuvier's Beaked Whale Small and Resident Population Area

NMFS recognizes a Hawaii stock of Cuvier's beaked whale that occurs in the Hawaii Study Area (Carretta et al., 2023). The stock is not listed under the ESA.

Cuvier's beaked whales are regularly found in waters surrounding the Hawaiian Islands (Baird et al., 2015a; Baird et al., 2009; Baird, 2013; Barlow, 2006; Baumann-Pickering et al., 2010; Baumann-Pickering et al., 2014; Bradford et al., 2013b; Lammers et al., 2015c; Mobley, 2004; Oleson et al., 2013b; Oleson et al., 2015; Shallenberger, 1981). In Hawaii, Cuvier's beaked whales have been occasionally observed breaching and this along with their large size and visible blows likely increases their detectability (Baird et al., 2013b). There was a total of 40 Cuvier's beaked whale sightings during systematic ship surveys within the Hawaiian Islands EEZ in 2002, 2010, and 2017, and none of the sightings were in waters within 140 km of the Main Hawaiian Islands (Bradford et al., 2021). Sightings have been reported off the Hawaiian Islands of Lanai, Maui, Hawaii, Niihau, and Kauai, providing strong evidence for both insular and offshore populations of Cuvier's beaked whales in waters of the Hawaiian Islands EEZ (Baird et al., 2015a; Baird et al., 2009; Baird, 2013; Mobley, 2004; Oleson et al., 2013b; Oleson et al., 2015; Shallenberger, 1981).

BIAs were redefined for a year-round Small and Resident Population area for Cuvier's beaked whales in Hawaiian waters (Kratofil et al., 2023). The parent BIA is 37,157 km^2 in size and the child BIA encompasses 5,400 km^2 within this region (Figure K-17). The child BIA was defined based on occurrence data that indicate that Cuvier's beaked whales spend the majority of their time between the 2,000 and 3,500-meter isobaths off the leeward side of the Island of Hawaii.

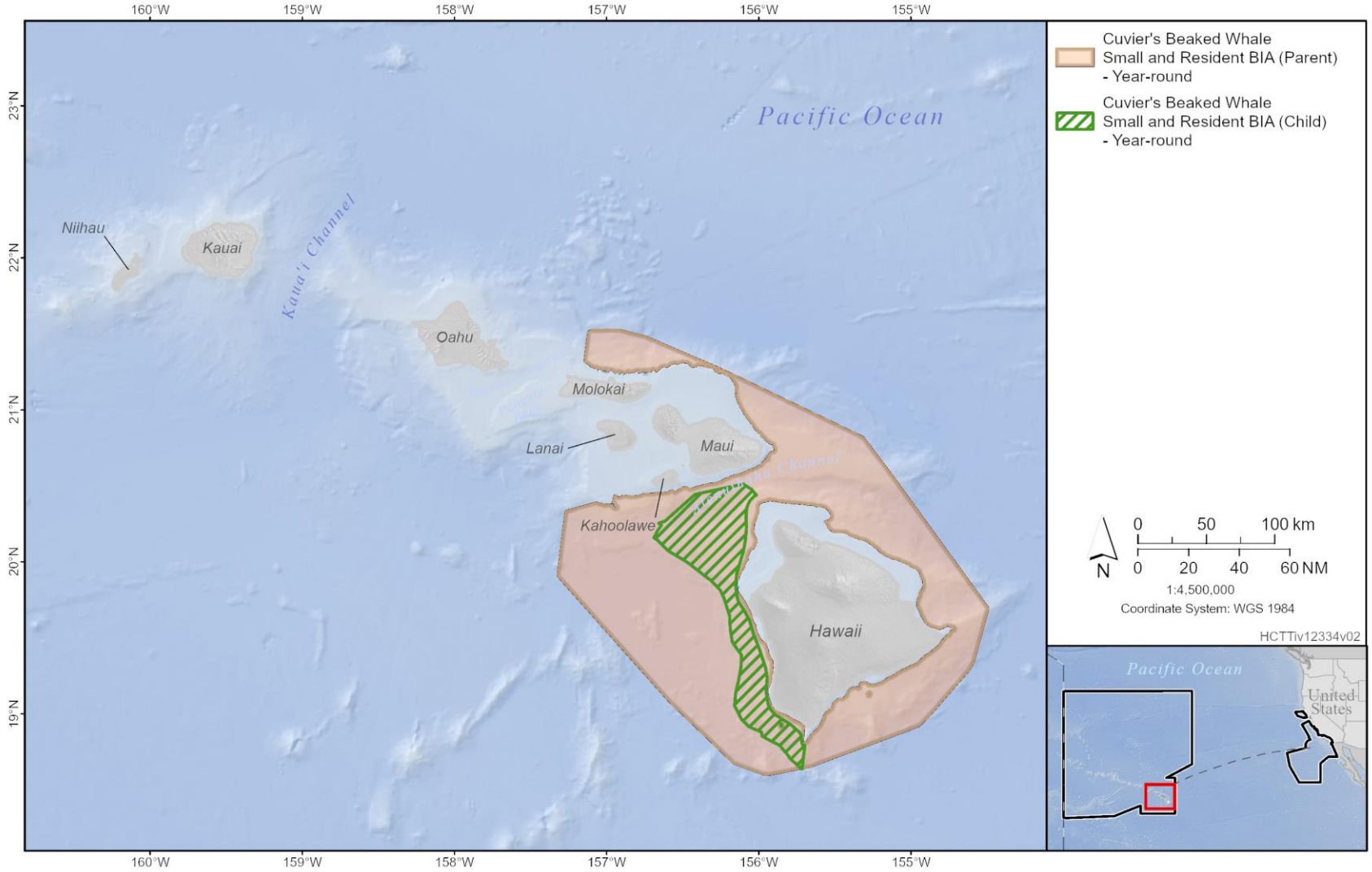


Figure K-17: Cuvier's Beaked Whale Small and Resident Population BIAs Off the Hawaiian Islands

K.3.11.2 Stressor Analysis

K.3.11.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting Cuvier's beaked whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, the effects that are predicted to occur in Hawaii Range Complex to the Hawaii stock of the Cuvier's beaked whale present in the waters surrounding the Hawaiian Islands are distributed relatively evenly between the cold and warm seasons. Ninety-nine percent of the behavioral, 98 percent of the temporary threshold shift, and 0 percent of the auditory injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Only one take (behavioral) is predicted to occur from the training and testing activities involving air guns to Cuvier's beaked whales annually in the Hawaii Study Area.

On average, individuals in the Hawaii stock would be impacted several times per year, primarily due to behavioral responses. The average risk of injury for either stock is negligible, although a few auditory injuries are predicted. The risk of auditory injury from explosive training is low (less than one) in any year, but a couple auditory injuries are shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). These auditory injuries are shown in the maximum year of effects per the summation and rounding approach discussed above. Therefore, the risk of auditory injury from any source is unlikely. The risk of injury may be reduced through activity-based mitigation, although beaked whales have low sightability.

Several instances of behavioral disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who suffer an auditory injury may experience minor energetic costs. Most predicted effects are behavioral responses in an open ocean basin that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to these stocks are unlikely.

K.3.11.3 Action Proponent Requirements for Area-Specific Training and Testing

The Alenuihaha Channel, as well as the waters north and west of Hawaii Island, provides a unique training capability that does not exist elsewhere in the Hawaii Range Complex. The Alenuihaha Channel is an ideal location for strait transits using mid-frequency active sonar during training. The Alenuihaha Channel is an actual channel that provides a vital and realistic analog for similar straits or restricted maneuvering areas where the Navy operates worldwide, such as the East or South China seas. For example, transit training in the Alenuihaha Channel replicates these types of strait environments that meet the Navy's requirement to deploy Naval forces to ensure the free flow of commerce and the freedom of navigation by combatting piracy or mine threats. Naval forces are required to train to counter a submarine threat before deployment, to ensure such forces obtain the required proficiency to

conduct anti-submarine warfare in a controlled and observed environment prior to deployment to international straits across the globe, where operational Commanders require Naval forces to be able to conduct a range of military operations, including anti-submarine warfare. This required proficiency cannot be replicated by simulation and is most effectively obtained when conducted in a strait. Commanding Officers cannot be expected to effectively conduct such operations in a deployed environment if the first time they encounter a submarine in a strait is in a deployed setting. There are few geographic areas that enable forces to do this type of training outside of the HCTT Study Area.

While there are other channels within the Hawaii Range Complex used for strait transit training and anti-submarine warfare training, none provide the important attributes of the Alenuihaha Channel. The Alenuihaha Channel's proximity to the Pohakuloa Training Area allows for realistic training and reduces time and fuel costs between these training areas. The channel between Niihau and Kauai is also acceptable from a training perspective, but this would add at least two days of transit during each Under Sea Warfare training exercise (time required to move through a different channel and reposition to operating areas near Pohakuloa Training Area). The Kaiwi Channel between Oahu and Molokai is also acceptable from some mid-frequency active sonar training perspective, but it is also a significant civilian air corridor, and raises safety concerns for anti-submarine warfare aircraft flying in that channel. In addition, the channel between Nihau and Kauai is proximate to the PMRF instrumented range) which would result in problems de-conflicting multiple activities and hazardous operations, raising safety concerns. For these reasons, Alenuihaha Channel is still the most suitable for anti-submarine warfare training during certain training scenarios. The Hawaii Island Cuvier's Beaked Whale Small and Resident Population Area is adjacent to waters approaching Kawaihae Harbor, the point of amphibious insertion for forces proceeding to the range at Pohakuloa Training Area, which is the only range in the Hawaii Range Complex that supports ground force and aviation live-fire training. Training in this area allows for the integration of carrier strike group operations and amphibious landings, working in conjunction within a controlled airspace west of Hawaii Island for military training near the Pohakuloa Training Area range. Carrier strike group training can include a full spectrum of the force–various ships, submarines, aircraft, and Marine Corps forces—to train in the complex command, control operational coordination, and logistics functions designed to prepare forces for deployment. As an air to ground range, Pohakuloa Training Area supports carrier strike group activities near a channel and near large open water areas for strike group maneuvering and submarine activities. Mid-frequency active sonar conducted to support strike maneuver and protect high value units (e.g., carrier) as aircraft go to strike at Pohakuloa Training Area is vital.

Access to both the Alenuihaha Channel and the waters west of Kawaihae Harbor is vital for a broad spectrum of naval and amphibious training. These areas provide a unique and irreplaceable capability within the Hawaii Range Complex that allows naval forces to conduct realistic, integrated training in an environment that replicates the actual areas where they will be called to serve.

K.3.11.4 Cuvier's Beaked Whale Small and Resident Population Area Mitigation Assessment

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for Cuvier's beaked whale and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which, as shown in Figure K-26, overlaps all of the revised small and resident population child BIA. While this mitigation area was designed to provide additional protection for false killer whales and some beaked whale species, these

measures will also reduce the number and level of effects to other species or stocks occurring within the area, including Cuvier's beaked whales without compromising military readiness. The Navy will continue to implement these existing mitigation areas to the benefit of Cuvier's beaked whales present in the Hawaii Study Area. However, because most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals, additional mitigation areas based on the revised Hawaii Island Cuvier's beaked whale child BIA are not being proposed.

K.3.12 Hawaii Island Blainville's Beaked Whale Small and Resident Population Area

K.3.12.1 Biological Considerations Applicable to the Blainville's Beaked Whale Small and Resident Population Area

NMFS recognizes one stock of Blainville's beaked whale in the waters surrounding the Hawaiian Islands: Hawaii stock (Carretta et al., 2023). The stock is not listed under the ESA.

Blainville's beaked whales are regularly sighted in Hawaiian waters (Baird, 2006; Baird et al., 2015a; Baird et al., 2003b; Barlow, 2006; Bradford et al., 2017; McSweeney et al., 2007), and their vocalizations have been routinely detected in acoustic monitoring in the Hawaiian Islands (Henderson et al., 2015a; Klinck et al., 2015b; Lammers et al., 2015b; Manzano-Roth et al., 2016; Manzano-Roth et al., 2013a; Rankin & Barlow, 2007). There were a total of 15 Blainville's beaked whale sightings during systematic ship surveys within the Hawaiian Islands EEZ in 2002, 2010, and 2017, and none of the sightings were in waters within 140 km of the Main Hawaiian Islands (Bradford et al., 2021).

Blainville's beaked whale has been detected off the coast of Oahu, Hawaii for prolonged periods annually, and this species is consistently observed in the same site off the west coast of the Island of Hawaii (Abecassis et al., 2015; Baird et al., 2006; McSweeney et al., 2007). Thirteen Blainville's beaked whales were satellite tagged off Hawaii Island between 2006 and 2012 with data records ranging from 15 to 159 days (Baird et al., 2015a; Baird et al., 2011). One tagged individual ranged from approximately 18 km to 573 km from land and moved a total of over 900 km from the initial tag location in 20 days. Similar data over an 8-day period for an individual tagged off Kauai showed movement on and off the Navy's instrument range at PMRF three times before transiting to the southwest over a distance of approximately 100 km from the original tag location (Baird et al., 2015a).

BIAs were redefined for a year-round Small and Resident Population area for Blainville's beaked whales off the west coast and North Kohala portion of the Island of Hawaii, extending to the west and north to encompass waters off Maui Nui and Oahu (Kratofil et al., 2023). The parent BIA is 78,714 km^2 in size and the child BIA encompasses 4,214 km^2 within this region, representing an area of intensified use off the west coast and North Kohala portion of the Island of Hawaii (Figure K-18).

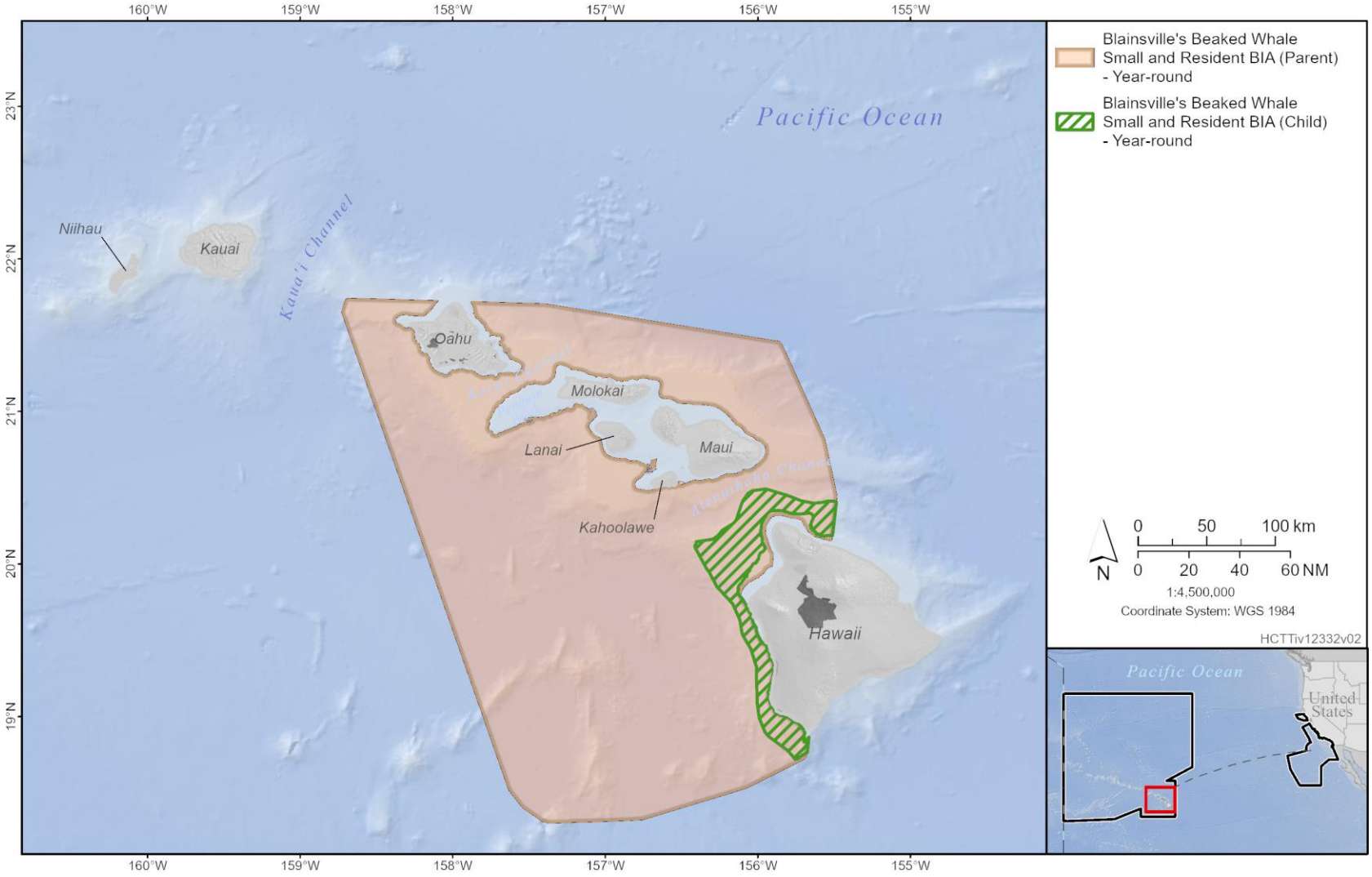


Figure K-18: Blainville's Beaked Whales Small and Resident BIAs Off the Hawaiian Islands

K.3.12.2 Stressor Analysis

K.3.12.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting Blainville's beaked whales. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, the effects that are predicted to occur in Hawaii Range Complex to the Hawaii stock of Blainville's beaked whale present in the waters surrounding the Hawaiian Islands are distributed relatively evenly between the cold and warm seasons. Ninety-nine percent of the behavioral and 97 percent of the temporary threshold shift takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. No effects are predicted to occur from the training and testing activities involving air guns.

On average, individuals in the Hawaii stock of Blainville's beaked whales could be impacted several times per year, primarily due to behavioral responses from training and testing activities involving the use of sonar. There are no predicted effects resulting in auditory injury, physical injury, or mortality takes.

A few instances of disturbance over a year are unlikely to have any long-term consequences for individuals, although individuals who suffer an auditory injury may experience minor energetic costs. Based on the above analysis, long-term consequences for the Hawaii stock of Blainville's beaked whales are unlikely.

K.3.12.3 Action Proponent Requirements for Area-Specific Training and Testing

The Alenuihaha Channel, as well as the waters north and west of Hawaii Island, provides a unique training capability that does not exist elsewhere in the Hawaii Range Complex. The Alenuihaha Channel is an ideal location for strait transits using mid-frequency active sonar during training. The Alenuihaha Channel is an actual channel that provides a vital and realistic analog for similar straits or restricted maneuvering areas where the Navy operates worldwide, such as the East or South China seas. For example, transit training in the Alenuihaha Channel replicates these types of strait environments that meet the Navy's requirement to deploy Naval forces to ensure the free flow of commerce and the freedom of navigation by combatting piracy or mine threats. Naval forces are required to train to counter a submarine threat before deployment, to ensure such forces obtain the required proficiency to conduct anti-submarine warfare in a controlled and observed environment prior to deployment to international straits across the globe, where operational Commanders require Naval forces to be able to conduct a range of military operations, including anti-submarine warfare. This required proficiency cannot be replicated by simulation and is most effectively obtained when conducted in a strait. Commanding Officers cannot be expected to effectively conduct such operations in a deployed environment if the first time they encounter a submarine in a strait is in a deployed setting. There are few geographic areas that enable forces to do this type of training outside of the HCTT Study Area.

While there are other channels within the Hawaii Range Complex used for strait transit training and anti-submarine warfare training, none provide the important attributes of the Alenuihaha Channel. The Alenuihaha Channel's proximity to the Pohakuloa Training Area allows for realistic training and reduces time and fuel costs between these training areas. The channel between Niihau and Kauai is also acceptable from a training perspective, but this would add at least two days of transit during each Under Sea Warfare training exercise (time required to move through a different channel and reposition to operating areas near Pohakuloa Training Area). The Kaiwi Channel between Oahu and Molokai is also acceptable from some mid-frequency active sonar training perspective, but it is also a significant civilian air corridor and raises safety concerns for anti-submarine warfare aircraft flying in that channel. In addition, the channel between Nihau and Kauai is proximate to the PMRF instrumented range) which would result in problems de-conflicting multiple activities and hazardous operations, raising safety concerns. For these reasons, Alenuihaha Channel is still the most suitable for anti-submarine warfare training during certain training scenarios. The Hawaii Island Blainville's Beaked Whale Small and Resident Population Area is adjacent to waters approaching Kawaihae Harbor, the point of amphibious insertion for forces proceeding to the range at Pohakuloa Training Area, which is the only range in the Hawaii Range Complex that supports ground force and aviation live-fire training. Training in this area allows for the integration of carrier strike group operations and amphibious landings, working in conjunction within a controlled airspace west of Hawaii Island for military training near the Pohakuloa Training Area range. Carrier strike group training can include a full spectrum of the force–various ships, submarines, aircraft, and Marine Corps forces—to train in the complex command, control operational coordination, and logistics functions designed to prepare forces for deployment. As an air to ground range, Pohakuloa Training Area supports carrier strike group activities near a channel and near large open water areas for strike group maneuvering and submarine activities. Mid-frequency active sonar conducted to support strike maneuver and protect high value units (e.g., carrier) as aircraft go to strike at Pohakuloa Training Area is vital.

Access to both the Alenuihaha Channel and the waters west of Kawaihae Harbor is vital for a broad spectrum of naval and amphibious training. These areas provide a unique and irreplaceable capability within the Hawaii Range Complex that allows naval forces to conduct realistic, integrated training in an environment that replicates the actual areas where they will be called to serve.

K.3.12.4 Blainville's Beaked Whale Small and Resident Population Area Mitigation Assessment

During the 2018 HSTT EIS/OEIS, the Navy balanced the need for the use of the area to meet training and testing requirements with the biological importance of the area for Blainville's beaked whale and other species. The Navy implemented the Hawaii Island Marine Mammal Mitigation Area (see Section K.1.1.3.2, Mitigation Areas for Marine Mammals in the Hawaii Study Area), which, as shown in Figure K-26, overlaps all of the revised small and resident child BIA. While these mitigation areas were designed to provide additional protection for humpback whales, false killer whales and some beaked whale species, these measures will also reduce the number and level of effects to other species or stocks occurring within the area, including Blainville's beaked whales without compromising military readiness. Therefore, because the Hawaii Island Marine Mammal Mitigation Area overlaps all of the revised small and resident child BIA, and because most effects to Blainville's beaked whales from military readiness activities in the Hawaii Study Area are expected to be behavioral, non-injurious, and are unlikely to result in any long-term effects to individuals, the Navy will continue to implement the existing mitigation

area to the benefit of Blainville's beaked whales present in the Hawaii Study Area and is not proposing additional mitigation areas.

K.4 Biologically Important Areas Within the California Study Area

K.4.1 Blue Whale Feeding Areas

K.4.1.1 Biological Considerations Applicable to Blue Whale Feeding Areas

NMFS recognizes two stocks of blue whales in the North Pacific: the Eastern North Pacific and Central North Pacific stocks (Carretta et al., 2023). Both stocks of blue whales are listed as endangered under the ESA, but only the Eastern North Pacific stock could be present in the California Study Area.

The Eastern North Pacific Stock of blue whales includes animals found in the eastern north Pacific from the northern Gulf of Alaska to the eastern tropical Pacific (Carretta et al., 2023). Based on habitat models derived from line-transect survey data collected between 1991 and 2018 off the U.S. West Coast, relatively high densities of blue whales are predicted off Southern California during the summer and fall (Barlow et al., 2009b; Becker et al., 2010; Becker et al., 2016; Forney et al., 2012). Data from year-round surveys conducted off Southern California from 2004 to 2013 show that the majority of blue whales were sighted in summer (62 sightings) and fall (9 sightings), with only single sightings in winter and spring (Campbell et al., 2015). In the Southern California Bight in summer and fall, the highest densities of blue whales occurred along the 200 m isobath in waters with high surface chlorophyll concentrations (Redfern et al., 2013). Campbell et al. (2015) documented blue whale sightings along both the Southern California shelf, and over deep ocean water (>2,000 m).

Abrahms et al. (2019) documented higher blue whale occurrence north of the Southern California (SOCAL) Range Complex and with critical areas located along shipping routes within the Santa Barbara Channel that provide access to the Ports of Los Angeles and Long Beach. Szesciorka et al. (2020) investigated the timing of blue whale migrations in association with environmental conditions and prey concentrations off Southern California over a 10-year period. Their findings showed that blue whales were arriving up to one month earlier off Southern California at the end of the study than they had been 10 years prior. However, the whales did not depart any earlier, leading to longer residency times in the Southern California Bight. Based on acoustic call detections, blue whales arrived in May and depart in November, remaining at the feeding grounds an average of 8.4 months. Blue whales demonstrated a flexible response to prey availability on an interannual basis based strongly on sea surface temperatures which are also correlated with krill biomass.

In 2015, feeding BIAs were delineated off the U.S. West Coast for the Eastern North Pacific stock of blue whales (Calambokidis et al., 2015b). The BIAs were redefined for blue whale feeding behavior off the U.S. West Coast by Calambokidis et al. (2024) (Figure K-19) and incorporated tagging and additional line-transect survey data not previously considered (Calambokidis et al., 2015b). The parent BIA encompass 173,000 km^2 equivalent to 21 percent of the U.S. West Coast EEZ and include coastal, shelf beak, and offshore waters (Figure K-19). The core BIA, which is approximately 54,000 km^2, is 30 percent of the parent BIA but still larger than the previous blue whale feeding BIAs defined in 2015. The BIAs are in effect from June through November.

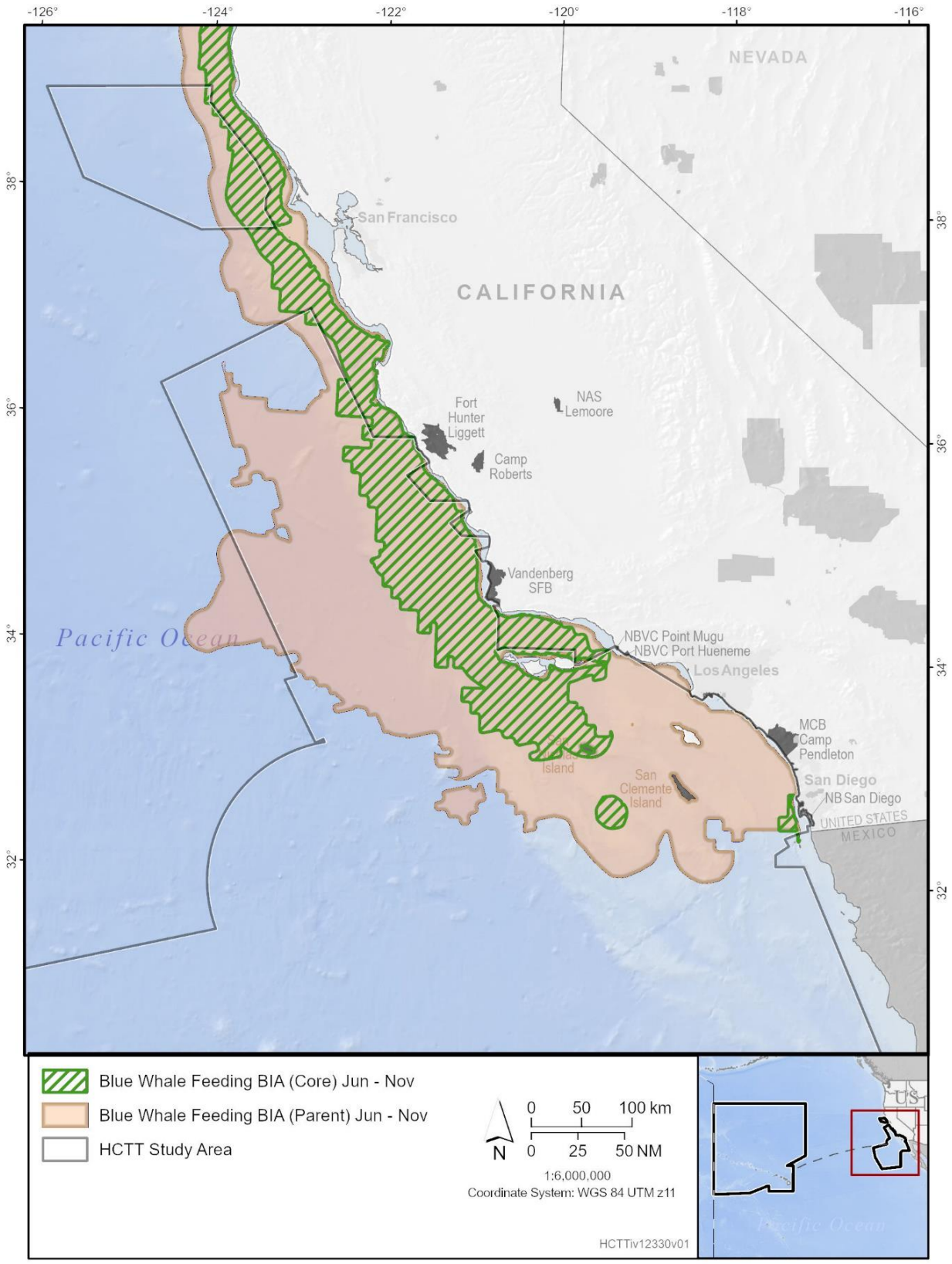


Figure K-19: Blue Whale Feeding Areas Off California

K.4.1.2 Stressor Analysis

K.4.1.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting blue whales and their feeding behavior. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 87 percent of effects are predicted to occur in the SOCAL Range Complex, with 44 percent occurring during the warm season as the whales spend time at feeding grounds in the Southern California Bight. Forty-three percent are predicted to occur in the cold season because the whales typically spend about 8 months at the feeding grounds before migrating farther south to breed in colder months. Ninety-four percent of the behavioral, 97 percent of the temporary threshold shift, and 89 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Negligible effects are predicted from the training and testing activities involving air guns because less than one behavioral take is predicted per year.

On average, individuals in the Eastern North Pacific stock could be impacted a couple times a year. There are no non-auditory injuries predicted and the average individual risk of auditory injury is low. The risk of auditory injury may be reduced through activity-based mitigation because blue whales are moderately sightable.

A case study examined long-term effects of changing environmental conditions and exposure to military sonar for Eastern North Pacific blue whales on the SOCAL Range Complex based on the description of sonar use in the previous action (2018 Hawaii-Southern California Training and Testing EIS/OEIS). According to the model, only a ten-fold increase in sonar activity combined with a shift in geographical location to overlap with main feeding areas of blue whales would result in a moderate decrease in lifetime reproductive success. Even in such extreme instances, there was still no effect on survival (Pirotta et al., 2022).

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an auditory injury may experience minor energetic costs. Most predicted effects are temporary auditory effects that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to the stock are unlikely.

Additionally, the same hull-mounted active sonar systems present on ships homeported in the HCTT Study Area and elsewhere have been in common use for over 40 years. Blue whales have been feeding in the California Study Area for the past 40 years and there has been no evidence of any disruption to blue whale feeding caused by Navy training and testing activities. Recent information suggests blue whales in the Eastern North Pacific Stock have recovered and are at a stable level. In short, there has

been no evidence to suggest any effect, let alone any significant impact, to blue whale feeding activity resulting from decades of Navy training and testing off California involving the use of sonar and other transducers. There is no evidence to suggest that limiting the use of sonar and other transducers in portions of the California Study Area that overlap with the revised blue whale BIAs would be beneficial to those behaviors. Therefore, the predicted temporary auditory effects on blue whales and behavioral responses by blue whales as they feed in the Study Area would be short-term and mild to moderate and are not expected to significantly disrupt feeding behaviors or impact overall species survivability.

K.4.1.3 Action Proponent Requirements for Area Specific Training and Testing

The portion of the revised blue whale BIAs within the California Study Area extends over 100 mi. from the coastline and encompasses every primary training site within the California Study Area. Spatially, blue whales may be present anywhere within the waters off California. Temporally, blue whales may be present for approximately 8 months of the year at feeding grounds in the Southern California Bight, mainly between June and November, before migrating farther south (Gulf of California) in colder months to breed.

The waters offshore of California have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like San Diego, CA.

The training and testing areas encompassed by the revised blue whale BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Southern California are not available elsewhere. They include the following: PMSR, the instrumented Southern California Offshore Anti-Submarine Warfare Range (SOAR); Shallow Water Training Range (SWTR); established helicopter sonar dipping areas, proximate to Naval Air Station North Island; Tanner Bank Minefield and mine training ranges; a sonobuoy test area; the Camp Pendleton Amphibious Assault Area; amphibious approach lanes; and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

Given the operating tempo requirements for maintaining continual cycles of training and testing in the California Study Area, rescheduling activities outside of the 6 months when blue whales would be accessing feeding grounds within the waters off California or reducing the number of training or testing activities during the warm season would not allow Navy to meet its readiness requirements. Similarly, Navy offshore instrumented ranges are typically used and scheduled for most of the year. There are no alternative instrumented ranges in the SOCAL Range Complex or PMSR, or elsewhere within close proximity to units homeported in Southern California, and there is insufficient excess capacity to avoid or reschedule training and testing cycles at these locations to occur outside the 6-months of the year when blue whales are feeding in the area.

K.4.1.4 Blue Whale Feeding Area Mitigation Assessment

As discussed in Section K.4.1.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to blue whales would occur in the SOCAL Range Complex from training and testing activities involving sonar, split evenly between the warm and cold seasons. However, most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals. Scientific data does not support a conclusion that significant effects on blue whale feeding behavior are occurring from Navy training and testing activities. Therefore halting, reducing, or otherwise limiting the use of explosives, air guns, or sonar and

other transducers in the area when blue whales may be generally present would not be effective at reducing effects on blue whale feeding activity.

As discussed in Section K.6 (Mitigation Areas to be Implemented), the existing California Large Whale Awareness Message Mitigation Area and Southern California Blue Whale Mitigation Area (Figure K-27), and the California Large Whale Real-Time Notification Mitigation Area, will continue to be implemented as they provide a benefit to blue whales when in the area feeding. In addition, the proposed Northern and Central California Large Whale Mitigation Areas (Figure K-27) would be implemented as described in Section K.6.1.1.1 (Northern and Central California Large Whale Mitigation Areas) to the benefit of multiple large whale species, including blue whales, when in the area.

K.4.2 Gray Whale Migratory and Reproductive Areas

K.4.2.1 Biological Considerations Applicable to the Gray Whale Migration and Reproduction Biologically Important Areas

NMFS recognizes two stocks of gray whales in the North Pacific: the Eastern North Pacific stock and the Western North Pacific stock (Weller et al., 2013). Both stocks could be present in the California Study Area during their northward and southward migrations (Mate et al., 2015a; Sumich & Show, 2011). The Western North Pacific Stock has previously been known as the Korean-Okhotsk population (Carretta et al., 2023). This stock is critically endangered, shows no apparent signs of recovery, and should be very rare in the California Study Area given their low abundance; however, gray whales from this stock are known to migrate along the U.S. West Coast (Calambokidis et al., 2024).

Gray whales are known to make one of the longest annual migrations of any mammal, 15,000–20,000 km roundtrip (Jefferson et al., 2015; Jones & Swartz, 2009). Eastern North Pacific gray whales begin their migration from breeding areas off Mexico and along the coast of North America in late fall through early spring to reach foraging areas by summer (Carretta et al., 2023; Urbán et al., 2021; Weller et al., 2012) and would only be present in the California Study Area during northbound and southbound migrations. A year-long (2013-2014) survey effort in the nearshore waters off San Diego within the HCTT Study Area encountered gray whales in January, February, and in the April-June timeframe (Graham & Saunders, 2015).

The timing of the October-July gray whale migrations that pass through the California Study Area can be loosely categorized into three phases (Calambokidis et al., 2015c; Jones & Swartz, 2009; Mate et al., 2013; Mate et al., 2015a; Mate & Urban-Ramirez, 2003; Rugh et al., 2008; Rugh et al., 2005; Urbán et al., 2021). Calambokidis et al. (2015c) noted these migration phases are not distinct; the timing for a phase may vary based on environmental variables, and that a migration phase typically begins with a rapid increase in migrating whales, followed by moderate numbers over a period of weeks, and then slowly tapering off. A southward migration from summer feeding areas includes all age classes as they migrate primarily to the nearshore waters and lagoons of Baja California, Mexico. During this southward migration from October through March, the whales generally are within 10 km of the coast (Calambokidis et al., 2015c) although there are documented exceptions where migrating gray whales have bypassed the coast by crossing sections of the open ocean (Mate et al., 2015a; Mate & Urban-Ramirez, 2003). In the HCTT Study Area, migrating gray whales may deviate farther from the mainland as some are routinely seen near the Channel Islands and to the west of San Clemente Island (Sumich & Show, 2011).

In 2015, four migratory BIAs were delineated off the U.S. West Coast for the Eastern North Pacific stock of gray whales (Calambokidis et al., 2015b). The four areas were defined by season as well as age and

sex classes to capture the variation in migratory behavior of the species. Calambokidis et al. (2024) modified the BIA delineations by incorporating new data and historical sightings, focusing on regional differences in migratory behavior, considering that the Phase B northbound migration used by mother-calf pairs should also be treated as a reproductive BIA, and applying the new parent-child hierarchy to further define areas of use by migrating whales. The revised migratory BIAs are listed below in Table K-8 and shown in Figure K-20:

Table K-8: Gray Whale Revised BIAs

BIA Level	BIA Name	BIA Time Period	BIA Size (sq. km)
Parent	West Coast to Gulf of Alaska	November – June	167,103
Child	Southbound	November – February	70,112
Child	Northbound Phase A	January – May	65,048
Child	Northbound Phase B	March – May	51,949

The parent migratory BIA was revised from the original southbound BIA defined by Calambokidis et al. (2015b) and extended north to connect with the Gulf of Alaska migratory BIA (Wild et al., 2023). The revised BIA is also referred to as the transboundary migratory BIA. The southbound (child) BIA is for all age and sex classes and extends 10 km from shore off California (and broadens to 15 km off Oregon and 30 km off Washington). The Northbound Phase A (child) BIA, primarily for adults and juveniles, extends 8 km from shore off California, and broadens to 15 km off Oregon and 20 km off Washington. The Northbound Phase B (child) BIA is primarily for mother-calf pairs and extends 5 km from shore north of the Southern California Bight and falls entirely within the Northbound Phase A (child) BIA.

Calambokidis et al. (2024) noted that two satellite-tagged Western North Pacific gray whales were documented using migratory corridors off the U.S. West Coast; however, the data used to delineate the BIAs were almost entirely from gray whales in the Eastern North Pacific stock.

In addition to the migratory BIAs, a reproductive BIA was delineated to coincide with the Northbound Phase B (child) migratory BIA for mother-calf pairs (Figure K-21), and a feeding BIA, which is located north of the Study Area, off the coast of the Pacific Northwest.

Based on the identified migratory seasons, gray whales should occur off the California coast for most of the year with the exception of the July–October timeframe (Calambokidis et al., 2024; Calambokidis et al., 2015c).

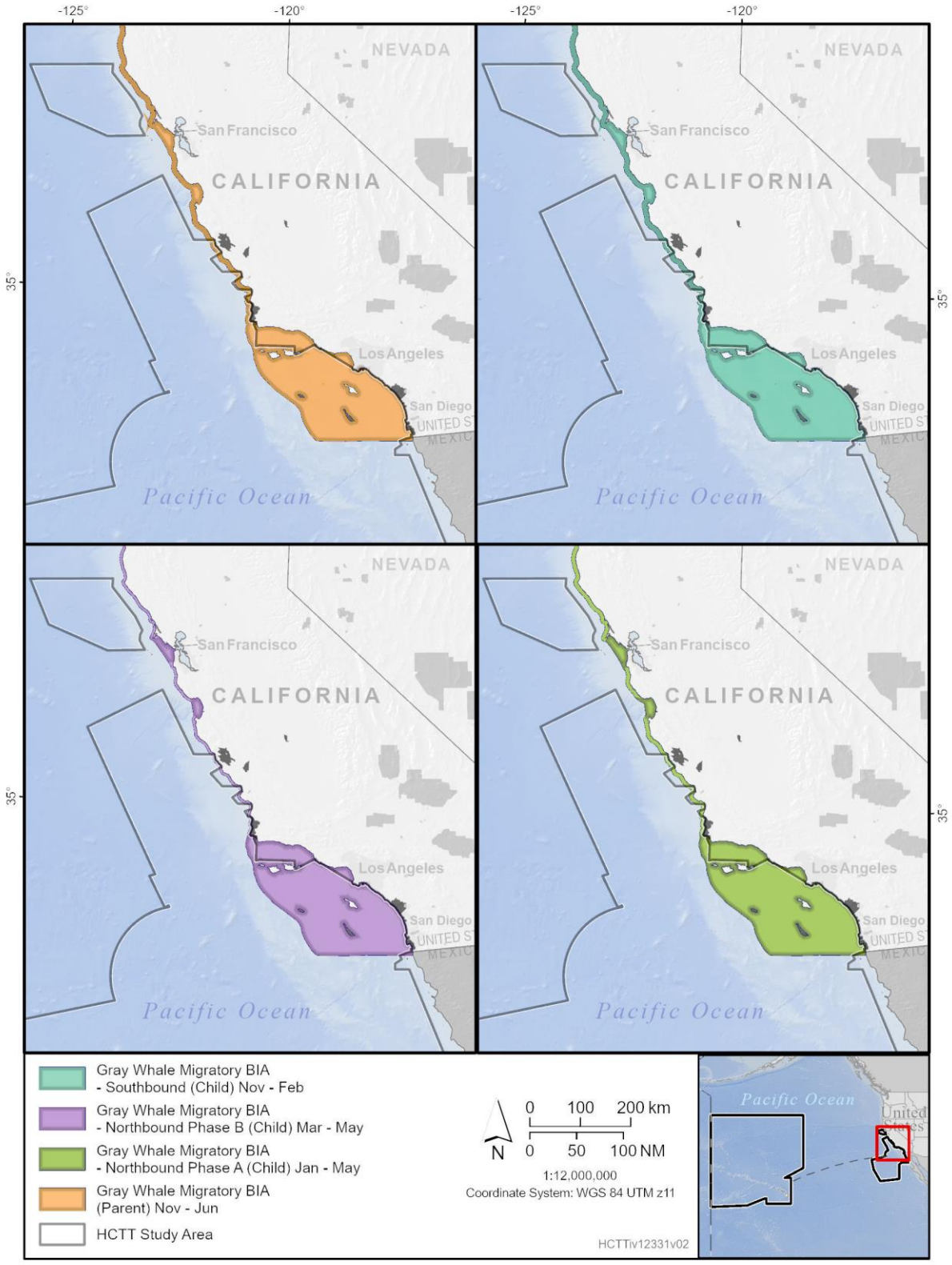


Figure K-20: Gray Whale Migratory BIAs Off California

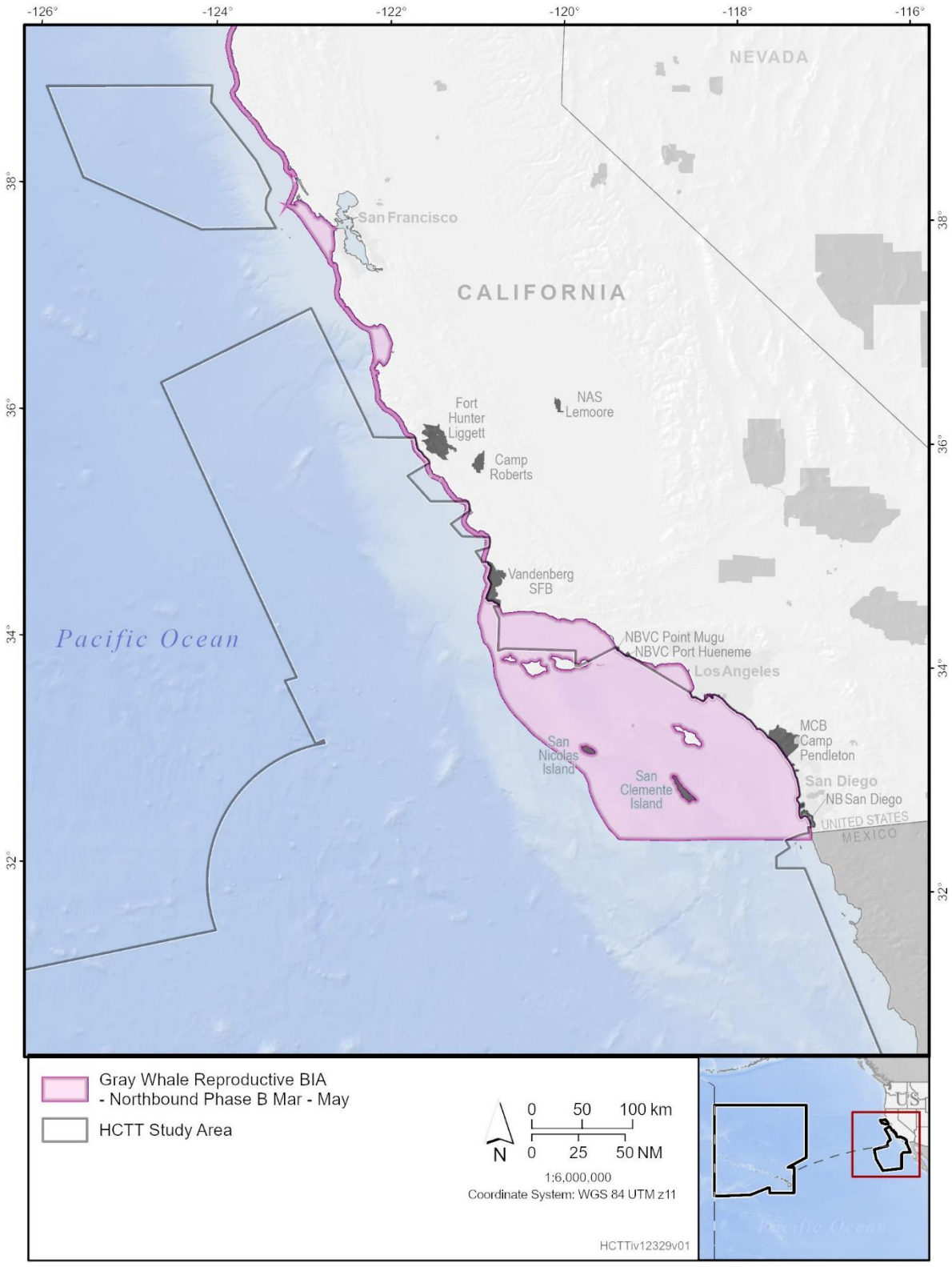


Figure K-21: Gray Whale Reproductive BIA Off California

K.4.2.2 Stressor Analysis

K.4.2.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting gray whales and their migration and reproductive behavior. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 97 percent of effects are predicted to occur in the SOCAL Range Complex during the cold season as the whales migrate north towards the Bering Sea to forage in the summer. Ninety-five percent of the behavioral, 95 percent of the temporary threshold shift, and 77 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. No effects are predicted from the training and testing activities involving air guns.

On average, individuals in the Eastern North Pacific stock would be impacted less than once per year. The average risk of injury is very low, although it is likely that some auditory injuries could occur, particularly from sonar during anti-submarine warfare activities. The risk of injury for this stock of gray whales may be reduced through activity-based mitigation. The risk of repeated effects on individuals and consequences to populations from disturbances of individuals can be mediated by certain life history traits of a species. Gray whales are large capital breeders with a slow pace of life.

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an auditory injury may experience minor energetic costs. Most predicted effects are temporary auditory effects that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to the stock are unlikely.

Additionally, the same hull-mounted active sonar systems present on ships homeported in the HCTT Study Area and elsewhere have been in common use for over 40 years. Gray whales have been migrating directly through the California Study Area twice a year during the past 40 years and there has been no evidence of any disruption to gray whale migration or reproduction caused by Navy training and testing activities. During that time, gray whales in the Eastern North Pacific Stock have recovered to the point where they are no longer listed under the ESA. In short, there has been no evidence to suggest any effect, let alone any significant impact, to gray whale migration or reproduction activity resulting from decades of Navy training and testing off California involving the use of sonar and other transducers. There is no evidence to suggest that limiting the use of sonar and other transducers in portions of the California Study Area that overlap with the revised gray whale migratory and reproductive BIAs would be beneficial to those behaviors. Therefore, the predicted temporary auditory effects on gray whales and behavioral responses by gray whales as they migrate through the Study Area, almost exclusively on their northward migration, would be short-term and mild to moderate and are not expected to significantly disrupt migratory or reproductive behaviors.

K.4.2.3 Action Proponent Requirements for Area-Specific Training and Testing

The portion of the revised gray whale BIAs within the California Study Area extends over 100 mi. from the coastline and encompasses every primary training site within the California Study Area. Spatially, migrating gray whales may be present anywhere within the waters off California. Temporally, gray whales may be present most of the year, migrating north January through May and south November through February. While not illustrated or addressed in Calambokidis et al. (2024) these migration routes extend south of the U.S. border with Mexico along the Baja California Peninsula, Mexico and mostly shoreward of the SOCAL Range Complex (U.S. Department of the Navy, 2024).

The waters offshore of California have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like San Diego, CA.

The training and testing areas encompassed by the revised gray whale BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Southern California are not available elsewhere. They include the following: PMSR, the instrumented SOAR; SWTR; established helicopter sonar dipping areas, proximate to Naval Air Station North Island; Tanner Bank Minefield and mine training ranges; a sonobuoy test area; the Camp Pendleton Amphibious Assault Area; amphibious approach lanes; and other complex bathymetric features necessary to challenge anti-submarine warfare skills. South of the U.S. – Mexico border, the migration route overlaps the Tactical Maneuvering Areas and Missile Range Areas located offshore of the gray whale calving areas adjacent to the Baja California Peninsula.

Given the operating tempo requirements for maintaining continual cycles of training and testing in the California Study Area, rescheduling activities outside of the five months of the gray whale migration (cold season when most predicted effects would occur) or reducing the number of training or testing activities during that migration season would not allow Navy to meet its readiness requirements. Similarly, Navy offshore instrumented ranges are typically used and scheduled for most of the year. There are no alternative instrumented ranges in the SOCAL Range Complex or PMSR, or elsewhere within close proximity to units homeported in Southern California, and there is insufficient excess capacity to avoid or reschedule training and testing cycles at these locations to occur outside the 5-months of the year when gray whales are migrating through the area.

K.4.2.4 Gray Whale Migration and Reproduction Area Geographic Mitigation Assessment

As discussed in Section K.4.2.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to gray whales would occur in the SOCAL Range Complex from training and testing activities involving sonar during the cold season as the whales migrate north towards the Bering Sea to forage in the summer. However, most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals. Scientific data does not support a conclusion that significant effects on gray whale migratory or reproductive behavior are occurring from Navy training and testing activities. Therefore halting, reducing, or otherwise limiting the use of explosives, air guns, or sonar and other transducers in the area when gray whales may be generally present would not be effective at reducing effects on gray whale migration or reproduction.

Navy training and testing require the use of the California Study Area throughout the year. Restricting use of that area when gray whales are present would have significant effects on the Navy mission and

readiness requirements. Geographic mitigation would not be effective at reducing significant effects on gray whale migration and reproduction within the California Study Area since none are occurring regardless of implementing mitigation. Therefore, based on the analysis presented above, additional specific geographic mitigation for gray whales is not recommended beyond what is currently being implemented.

As discussed in Section K.6 (Mitigation Areas to be Implemented), the existing California Large Whale Awareness Message Mitigation Area (Figure K-27) and the California Large Whale Real-Time Notification Mitigation Area will continue to be implemented as they provide a benefit to gray whales when migrating through the area or when engaged in reproductive activity in the area. In addition, the proposed Northern and Central California Large Whale Mitigation Areas (Figure K-27) would be implemented as described in Section K.6.1.1.1 (Northern and Central California Large Whale Mitigation Areas) to the benefit of multiple large whale species, including gray whales, when in the area.

K.4.3 Fin Whale Feeding Areas

K.4.3.1 Biological Considerations Applicable to the Fin Whale Feeding Areas

NMFS recognizes three stocks of fin whales in the North Pacific, all of which are listed as endangered under the ESA: the Northeast Pacific stock in Alaska; the California, Oregon, and Washington stock; and the Hawaii stock (Carretta et al., 2023; Young, 2023). Although some fin whales migrate seasonally (Falcone et al., 2011; Mate et al., 2016; Mate et al., 2015b), only the California, Oregon, and Washington stock could be present in the California Study Area.

Fin whales calls have frequently been recorded in waters within the California Study Area (Barlow & Forney, 2007; Campbell et al., 2015; Jefferson et al., 2014; Mate et al., 2016, 2017; Mizroch et al., 2009; Širović et al., 2016a; Širović et al., 2004; Širović et al., 2015; Smultea & Jefferson, 2014). As demonstrated by satellite tags and discovery tags[3], fin whales make long-range movements along the entire U.S. West Coast (Falcone et al., 2011; Mate et al., 2015b; Mizroch et al., 2009). However, photo-identification studies of fin whales off the U.S. West Coast suggest that not all fin whales undergo long seasonal migrations, but instead make short seasonal trips in spring and fall (Falcone et al., 2011; Falcone & Schorr, 2011b).

Based on predictive habitat-based density models derived from line-transect survey data collected between 1991 and 2018 off the U.S. West Coast, relatively high densities of fin whales are predicted off Southern California during the summer and fall with fewer occurring in winter and spring (Barlow et al., 2009a; Becker et al., 2020; Becker et al., 2012a; Becker et al., 2022a; Calambokidis et al., 2024; Forney et al., 2012). Aggregations of fin whales are present year-round in southern and central California (Campbell et al., 2015; Douglas et al., 2014; Forney & Barlow, 1998; Forney et al., 1995; Jefferson et al., 2014), although their distribution shows seasonal shifts. Sightings from year-round surveys off Southern California from 2004 to 2013 show fin whales farther offshore in summer and fall and closer to shore in winter and spring (Campbell et al., 2015; Douglas et al., 2014).

[3] As a means of data collection starting in the 1930s, discovery tags having a serial number and return address were shot into the blubber of the whale by scientists and if that whale was later harvested by the whaling industry and the tag "discovered" during flensing, it could be sent back to the researchers providing data on the movement of individual whales.

During the first phase of BIA development, the best available science was not sufficient to define BIAs for fin whale behavior off California (Calambokidis et al., 2015c). A combination of sightings, satellite tagging data, and habitat-based distribution models has since enabled researchers to define fin whale feeding BIAs along the U.S. West Coast (Calambokidis et al., 2024) (Figure K-22). The parent BIA encompasses approximately 315,000 km^2 and 38 percent of the U.S. West Coast EEZ and is the largest BIA designated off the West Coast. The core BIA is 49 percent of the parent BIA (approximately 155,000 km^2) (Calambokidis et al., 2024). The BIAs are in effect from June through November.

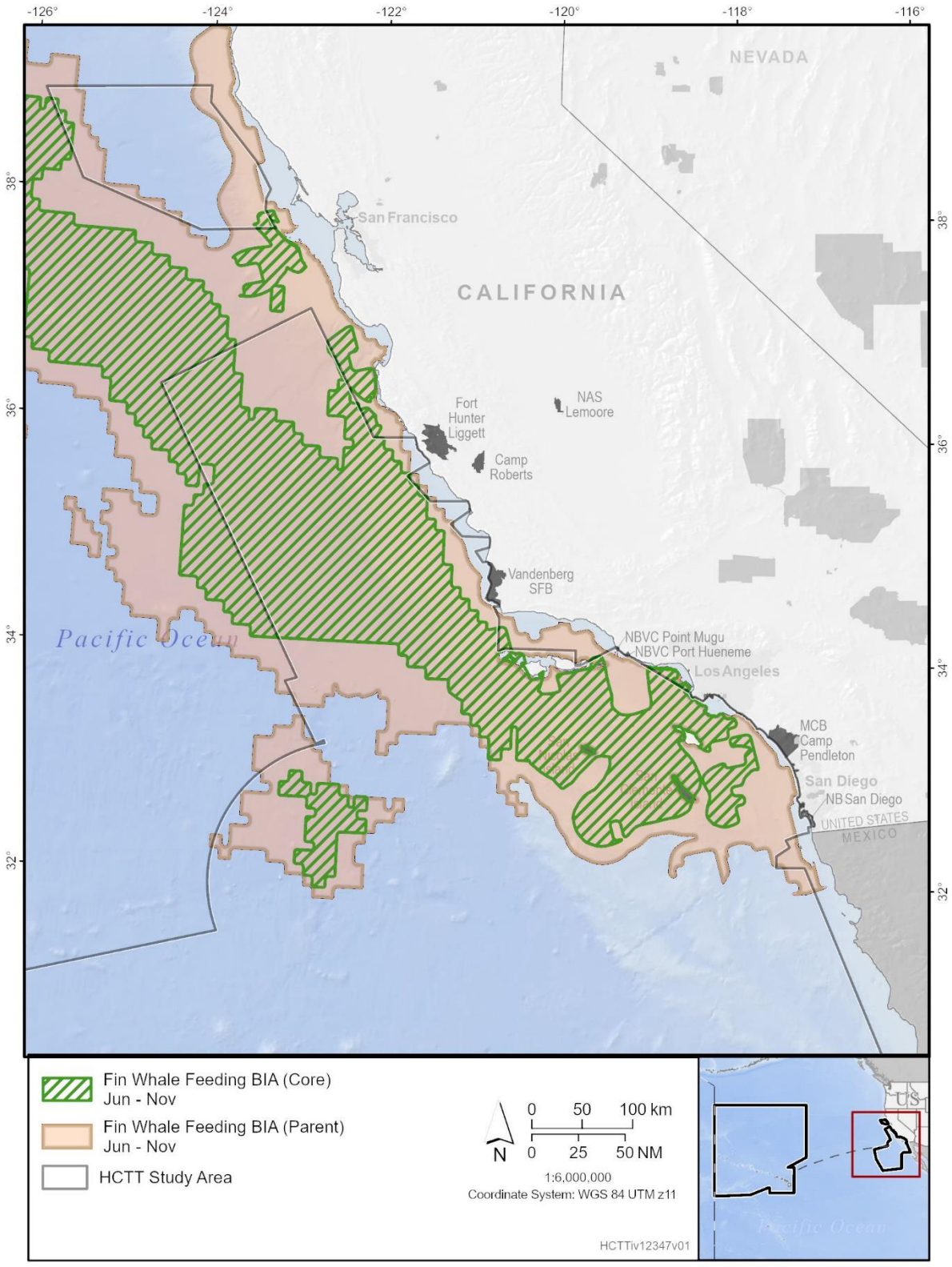


Figure K-22: Fin Whale Feeding BIAs Off California

K.4.3.2 Stressor Analysis

K.4.3.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting fin whales and their feeding behavior. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 51 percent of effects are predicted to occur in the SOCAL Range Complex, with 28 percent occurring during the warm season and 23 percent occurring during the cold season. Twenty-three percent and 25 percent of effects are predicted to occur in PMSR and the NOCAL Range complex, respectively, with the vast majority of those effects occurring during the warm season while fin whales spend time at feeding grounds off the U.S. West Coast. Ninety-five percent of the behavioral, 98 percent of the temporary threshold shift, and 80 percent of the acoustic injury takes would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Negligible effects are predicted from the training and testing activities involving air guns because less than one behavioral and temporary threshold shift takes are predicted per year.

On average, individuals in the California, Oregon, and Washington stock could be impacted about once a year. The average risk of injury is low, although auditory injuries are predicted for the California, Oregon, and Washington stock. The stock's risk of auditory injury from Navy testing sonar is also low (less than one) in any year, but an auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). The impact from Navy training explosives is very low (less than one) in any year, but a non-auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach. The risk of these injuries may be reduced through activity-based mitigation.

On average, the limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an injury may experience minor energetic costs. Most predicted effects are temporary auditory effects that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to the stock are unlikely. Therefore, long-term consequences to fin whales are unlikely.

Additionally, the same hull-mounted active sonar systems present on ships homeported in the HCTT Study Area and elsewhere have been in common use for over 40 years. Fin whales have been feeding in the California Study Area for the past 40 years and there has been no evidence of any disruption to fin whale feeding caused by Navy training and testing activities. In short, there has been no evidence to suggest any effect, let alone any significant impact, to fin whale feeding activity resulting from decades of Navy training and testing off California involving the use of sonar and other transducers. There is no evidence to suggest that limiting the use of sonar and other transducers in portions of the California

Study Area that overlap with the revised fin whale BIAs would be beneficial to those behaviors. Therefore, the predicted temporary auditory effects on fin whales and behavioral responses by fin whales as they feed in the Study Area would be short-term and mild to moderate and are not expected to significantly disrupt feeding behaviors or impact overall species survivability.

K.4.3.3 Action Proponent Requirements for Area-Specific Training and Testing

The portion of the fin whale BIAs within the California Study Area extends over 100 mi. from the coastline and encompasses every primary training site within the California Study Area. Spatially, fin whales may be present anywhere within the waters off California. Temporally, fin whales may be present most of the year, but would most likely be present within the waters off California while at feeding grounds between the months of June and November.

The waters offshore of California have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like San Diego, CA.

The training and testing areas encompassed by the fin whale BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Southern California are not available elsewhere. They include the following: NOCAL Range Complex, PMSR, the instrumented SOAR; SWTR; established helicopter sonar dipping areas, proximate to Naval Air Station North Island; Tanner Bank Minefield and mine training ranges; a sonobuoy test area; the Camp Pendleton Amphibious Assault Area; amphibious approach lanes; and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

Given the operating tempo requirements for maintaining continual cycles of training and testing in the California Study Area, rescheduling activities outside of the 6 months when fin whales would be accessing feeding grounds within the waters off California (warm season when most predicted effects would occur) or reducing the number of training or testing activities during the warm season would not allow Navy to meet its readiness requirements. Similarly, Navy offshore instrumented ranges are typically used and scheduled for most of the year. There are no alternative instrumented ranges in the SOCAL Range Complex or PMSR, or elsewhere within close proximity to units homeported in Southern California, and there is insufficient excess capacity to avoid or reschedule training and testing cycles at these locations to occur outside the 6-months of the year when fin whales are feeding in the area.

K.4.3.4 Fin Whale Feeding Area Geographic Mitigation Assessment

As discussed in Section K.4.3.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that approximately 50 percent of effects to fin whales would occur in the SOCAL Range Complex from training and testing activities involving sonar during either the warm or cold season. The other 50 percent of effects are split evenly between PMSR and the NOCAL Range Complex and would predominantly occur during the warm season in both areas. However, the overwhelming majority of effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals. Scientific data does not support a conclusion that significant effects on fin whale feeding behavior are occurring from Navy training and testing activities. Therefore halting, reducing, or otherwise limiting the use of explosives, air guns, or sonar and other transducers in the area when fin whales may be generally present would not be effective at reducing effects on fin whale feeding activity.

Navy training and testing require the use of the California Study Area throughout the year. Restricting use of that area when fin whales are present would have significant effects on the Navy mission and readiness requirements. Geographic mitigation would not be effective at reducing significant effects on fin whale feeding activity within the California Study Area since none are occurring regardless of implementing mitigation. Therefore, based on the analysis presented above, additional specific geographic mitigation for fin whales is not recommended beyond what is currently being implemented.

As discussed in Section K.6 (Mitigation Areas to be Implemented), the existing California Large Whale Awareness Message Mitigation Area (Figure K-27) and the California Large Whale Real-Time Notification Mitigation Area will continue to be implemented as they provide a benefit to fin whales when feeding in the area. In addition, the proposed Northern and Central California Large Whale Mitigation Areas (Figure K-27) would be implemented as described in Section K.6.1.1.1 (Northern and Central California Large Whale Mitigation Areas) to the benefit of multiple large whale species, including fin whales, when in the area.

K.4.4 Humpback Whale Feeding Areas

K.4.4.1 Biological Considerations Applicable to the Humpback Whale Feeding Areas

NMFS recognizes 14 DPSs of humpback whales worldwide, with four DPSs occurring in the North Pacific (Carretta et al., 2023). Humpback whales that occur seasonally in the HCTT Study Area are from three of the four DPSs identified by low-latitude wintering habitats: Hawaii DPS, Mexico DPS, and Central America DPS (Bettridge et al., 2015; Carretta et al., 2023; National Marine Fisheries Service, 2016b; Young, 2023). The three previously defined stocks of North Pacific humpback whales did not align with the DPS structure, so NMFS reevaluated the stock structure to incorporate both the locations of foraging and overwintering areas and population demographics. As a result, NMFS defined five stocks in the North Pacific:

6. Central America/Southern Mexico-California-Oregon-Washington stock
7. Mainland Mexico-California-Oregon-Washington stock
8. Mexico-North Pacific stock
9. Hawaii stock
10. Western North Pacific stock

Of the five stocks listed above, two are found in the California Study Area: Central America/Southern Mexico-California-Oregon-Washington and Mainland Mexico-California-Oregon-Washington. Humpback whales from the Mainland Mexico-California-Oregon-Washington stock, which are listed as threatened under the ESA, migrate to summer foraging habitat from California northward along the U.S. West Coast, Canada, Alaska, into the Bering Sea, and off the coast of Russia. Humpback whales from the Central America/Southern Mexico-California-Oregon-Washington stock, which are listed as endangered under the ESA, forage in waters off California and the Pacific Northwest (Carretta et al., 2023).

Off the U.S. West Coast, humpback whales are more abundant in shelf and slope waters (<2,000 m deep), and are often associated with areas of high productivity (Becker et al., 2020; Becker et al., 2010; Becker et al., 2012b; Becker et al., 2014; Forney et al., 2012; Redfern et al., 2013). While most humpback whale sightings are in nearshore and continental shelf waters, humpback whales frequently travel through deep oceanic waters during migration (Calambokidis et al., 2001; Clapham, 2000; Clapham & Mattila, 1990; Mate et al., 1997). Humpback whales migrating from breeding grounds in Central America to feeding grounds at higher latitudes may cross the California Study Area including the Transit Corridor

located farther offshore. While most humpback whales migrate, data from surveys conducted between 2004 and 2013 show that humpback whales occur year round off Southern California (Campbell et al., 2015). Peak occurrence during migration occurs in the California Study Area from December through June (Calambokidis et al., 2015a). During late summer, more humpback whales are sighted north of the Channel Islands, and limited occurrence is expected south of the northern Channel Islands (San Miguel, Santa Rosa, Santa Cruz) (Carretta et al., 2010). Based on aerial survey data collected between 2008 and 2012 in the California Study Area, Smultea and Jefferson (2014) determined that humpback whales ranked eighth in relative occurrence and concluded that this species has clearly increased their representation in the Navy's SOCAL Range Complex over the last several decades

Two BIAs (parent and core) for humpback whale feeding behavior have been identified in the California Study Area (Figure K-23). The parent BIA encompasses approximately 140,000 km^2 equivalent to 20 percent of the area of the U.S. West Coast EEZ, and the core BIA encompasses approximately 38,000 km^2 (Calambokidis et al., 2024). The BIAs are only in effect from March through November when foraging humpback whales are expected to be present. The core BIA is 27 percent of the parent BIA but is still a little over 50 percent larger than the previous Humpback Whale feeding BIAs defined in 2015.

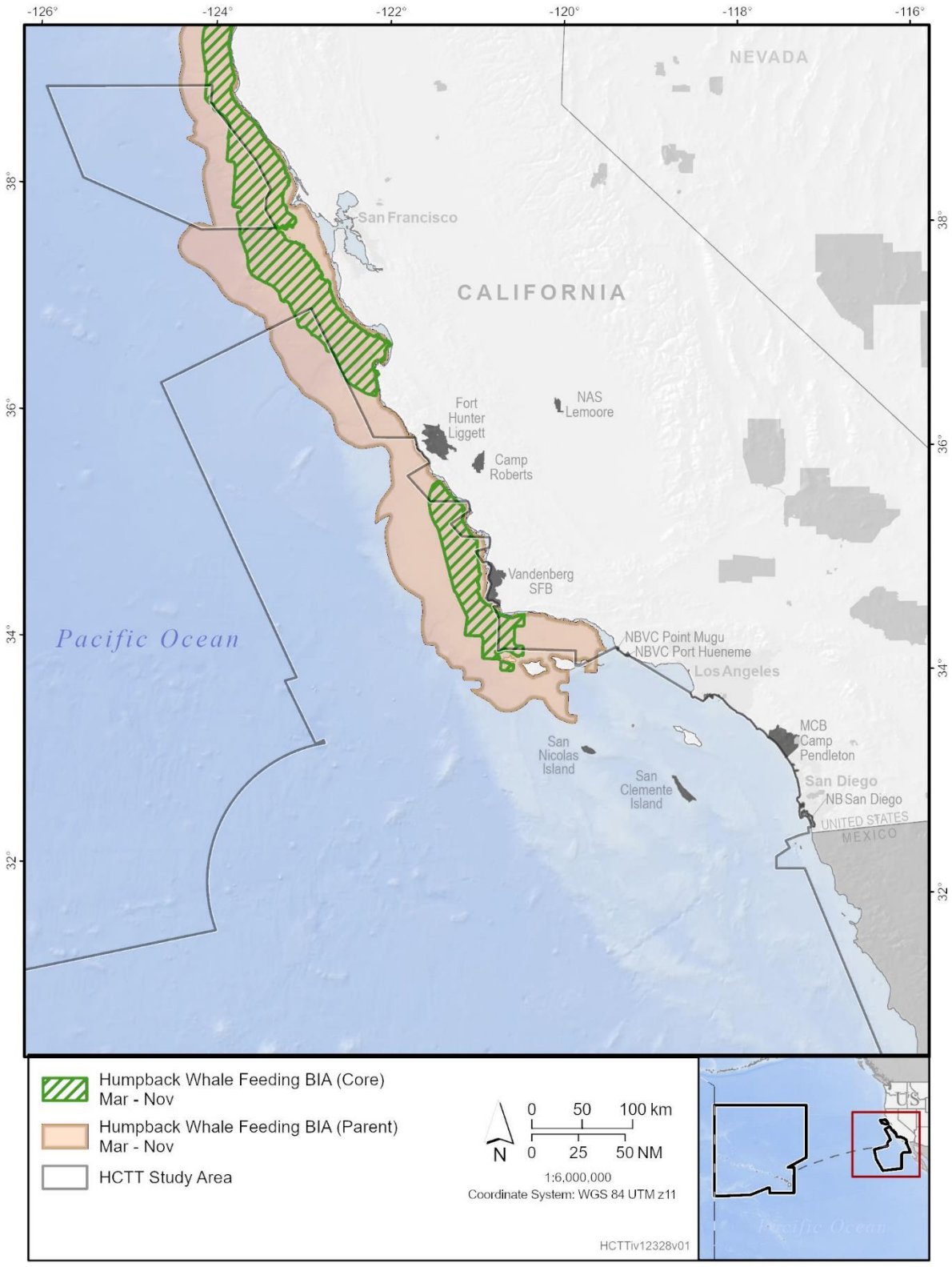


Figure K-23: Humpback Whale Feeding BIAs Off California

K.4.4.2 Stressor Analysis

K.4.4.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting humpback whales and their feeding behavior. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 51 percent of effects to the Central America/Southern Mexico-California-Oregon-Washington stock are predicted to occur in the SOCAL Range Complex during the cold season, and 5 percent would occur during the warm season. Fourteen percent of effects would occur in PMSR during the cold season, 6 percent would occur during the warm season, and 17 percent would occur in the NOCAL Range Complex during the warm season with 6 percent occurring during the cold season. Ninety-four percent of the behavioral, 97 percent of the temporary threshold shift, and 89 percent of the acoustic injury takes to the Central America/Southern Mexico-California-Oregon-Washington stock would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIAs, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

For the Mainland Mexico-California-Oregon-Washington stock, 52 percent of effects are predicted to occur in the SOCAL Range Complex during the cold season, and 6 percent would occur during the warm season. Twelve percent of effects would occur in PMSR during the cold season, 6 percent would occur during the warm season, and 17 percent would occur in the NOCAL Range Complex during the warm season with 6 percent occurring during the cold season. The remaining 1 percent of effects would occur on the high seas outside of the Study Area. Ninety-five percent of the behavioral, 96 percent of the temporary threshold shift, and 91 percent of the acoustic injury takes to the Mexico-North Pacific and Mainland Mexico-California-Oregon-Washington stocks would result from training and testing activities involving sonar.

Any exposure to an explosive stressor would be highly infrequent as documented from multiple years of Navy-funded passive acoustic monitoring (Debich et al., 2014) and variable individual unit level training schedules with prolonged periods of absence at sea between successive events. In addition, modeled takes from training and testing activities involving explosives make up a small percentage of the overall takes as shown in the Acoustic and Explosive Effects Analysis Report. Negligible effects are predicted from the training and testing activities involving air guns because less than one behavioral and temporary threshold shift takes are predicted per year.

On average, individuals in the Central America/Southern Mexico-California-Oregon-Washington and Mainland Mexico-California-Oregon-Washington stocks humpback whales could be impacted about once a year. These effects are most likely to occur in the cold season when humpbacks would be feeding along California within the Study Area. The average risk of injury is low, although it is likely that some auditory injuries could occur, particularly from sonar activities during Navy training events. The risk of a single non-auditory injury from testing explosives is low (less than one) in any year for the Mainland Mexico-California-Oregon-Washington stock, but a non-auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). This auditory injury is shown in the maximum year of effects per the

summation and rounding approach discussed above. The risk of injury may be reduced through activity-based mitigation.

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an auditory or non-auditory injury may experience minor energetic costs. Most predicted effects are temporary auditory effects that are unlikely to contribute to any long-term effects to individuals. Long-term consequences to the stocks are unlikely.

Additionally, the same hull-mounted active sonar systems present on ships homeported in the HCTT Study Area and elsewhere have been in common use for over 40 years. Humpback whales have been feeding in the California Study Area during the past 40 years and there has been no evidence of any disruption to humpback feeding behavior caused by Navy training and testing activities. In addition, humpback whales abundance off the U.S. West Coast has appeared to increase at a rate of approximately 8 percent per year since 1989 (Calambokidis & Barlow, 2020). However, since multiple humpback whale stocks occur in these waters, this overall trend cannot be assumed for each of the individual stocks. In short, there has been no evidence to suggest any effect, let alone any significant impact, to humpback whale feeding activity resulting from decades of Navy training and testing off California involving the use of sonar and other transducers. There is no evidence to suggest that limiting the use of sonar and other transducers in portions of the California Study Area that overlap with the revised humpback whale feeding BIAs would be beneficial to those behaviors. Therefore, the predicted temporary auditory effects on humpback whales and behavioral responses by humpback whales as they feed within the Study Area would be short-term and mild to moderate and are not expected to significantly disrupt feeding behaviors.

K.4.4.3 Action Proponent Requirements for Area-Specific Training and Testing

The portion of the humpback whale BIAs within the California Study Area extends over 100 mi. from the coastline and encompasses some training sites within the California Study Area. Spatially, humpback whales may be present anywhere within the waters off California. Temporally, humpback whales may be present most of the year, but would most likely be present within the waters off California while at feeding grounds within the California Study Area between the months of March and November.

The waters offshore of California have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit level events to complex major training exercises. Military readiness depends on access to the training and testing areas in close proximity to force concentration areas like San Diego, CA.

The training and testing areas encompassed by the humpback whale BIAs provide critical capabilities necessary to conduct military readiness activities by forces homeported in Southern California are not available elsewhere. They include the following: NOCAL Range Complex, PMSR, amphibious approach lanes, and other complex bathymetric features necessary to challenge anti-submarine warfare skills.

Given the operating tempo requirements for maintaining continual cycles of training and testing in the California Study Area, rescheduling activities outside of the 9 months when humpback whales would be accessing feeding grounds within the waters off California or reducing the number of training or testing activities during the cold season when the majority of effects would occur would not allow Navy to meet its readiness requirements. Similarly, Navy offshore instrumented ranges are typically used and scheduled for most of the year. There are no alternative instrumented ranges in the SOCAL Range Complex or PMSR, NOCAL Range Complex, or elsewhere within close proximity to units homeported in

Southern California, and there is insufficient excess capacity to avoid or reschedule training and testing cycles at these locations to occur outside the 9-months of the year when humpback whales are feeding in the area.

K.4.4.4 Humpback Whale Feeding Area Geographic Mitigation Assessment

As discussed in Section K.4.4.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that approximately 58 percent of effects to humpback whales would occur in the SOCAL Range Complex from training and testing activities involving sonar during either the warm or cold season. However, the revised humpback whale feeding BIA does not overlap the SOCAL Range Complex. The other approximately 42 percent of effects are split relatively evenly between PMSR and the NOCAL Range Complex, which do overlap the BIA, and would occur during both the warm and cold season in both areas. The overwhelming majority of effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals. Scientific data does not support a conclusion that significant effects on humpback whale feeding behavior are occurring from Navy training and testing activities. Therefore halting, reducing, or otherwise limiting the use of explosives, air guns, or sonar and other transducers in the area when humpback whales may be generally present would not be effective at reducing effects on humpback whale feeding activity.

Navy training and testing require the use of the California Study Area throughout the year. Restricting use of that area when humpback whales are present would have significant effects on the Navy mission and readiness requirements. Geographic mitigation would not be effective at reducing significant effects on humpback whale feeding activity within the California Study Area since none are occurring regardless of implementing mitigation. Therefore, based on the analysis presented above, additional specific geographic mitigation for humpback whales is not recommended beyond what is currently being implemented.

As discussed in Section K.6 (Mitigation Areas to be Implemented), the existing California Large Whale Awareness Message Mitigation Area (Figure K-27) and the California Large Whale Real-Time Notification Mitigation Area will continue to be implemented as they provide a benefit to humpback whales when feeding in the area. In addition, the proposed Northern and Central California Large Whale Mitigation Areas (Figure K-27) would be implemented as described in Section K.6.1.1.1 (Northern and Central California Large Whale Mitigation Areas) to the benefit of multiple large whale species, including humpback whales, when in the area.

K.4.5 Harbor Porpoise Small and Resident Population Area

K.4.5.1 Biological Considerations Applicable to the Harbor Porpoise Small and Resident Population Area

Calambokidis et al. (2024) defined two non-hierarchical small and resident BIAs for the Monterey Bay and the Morro Bay stocks of harbor porpoise off California (Figure K-24). The Morro Bay BIA is 4,255 km^2 in size and the Monterey Bay BIA is 3,455 km^2 in size; both encompass waters from land to the 200-meter isobath within the defined ranges for the respective stocks, and are identical in size to the original BIAs defined in 2015 (Calambokidis et al., 2015b).

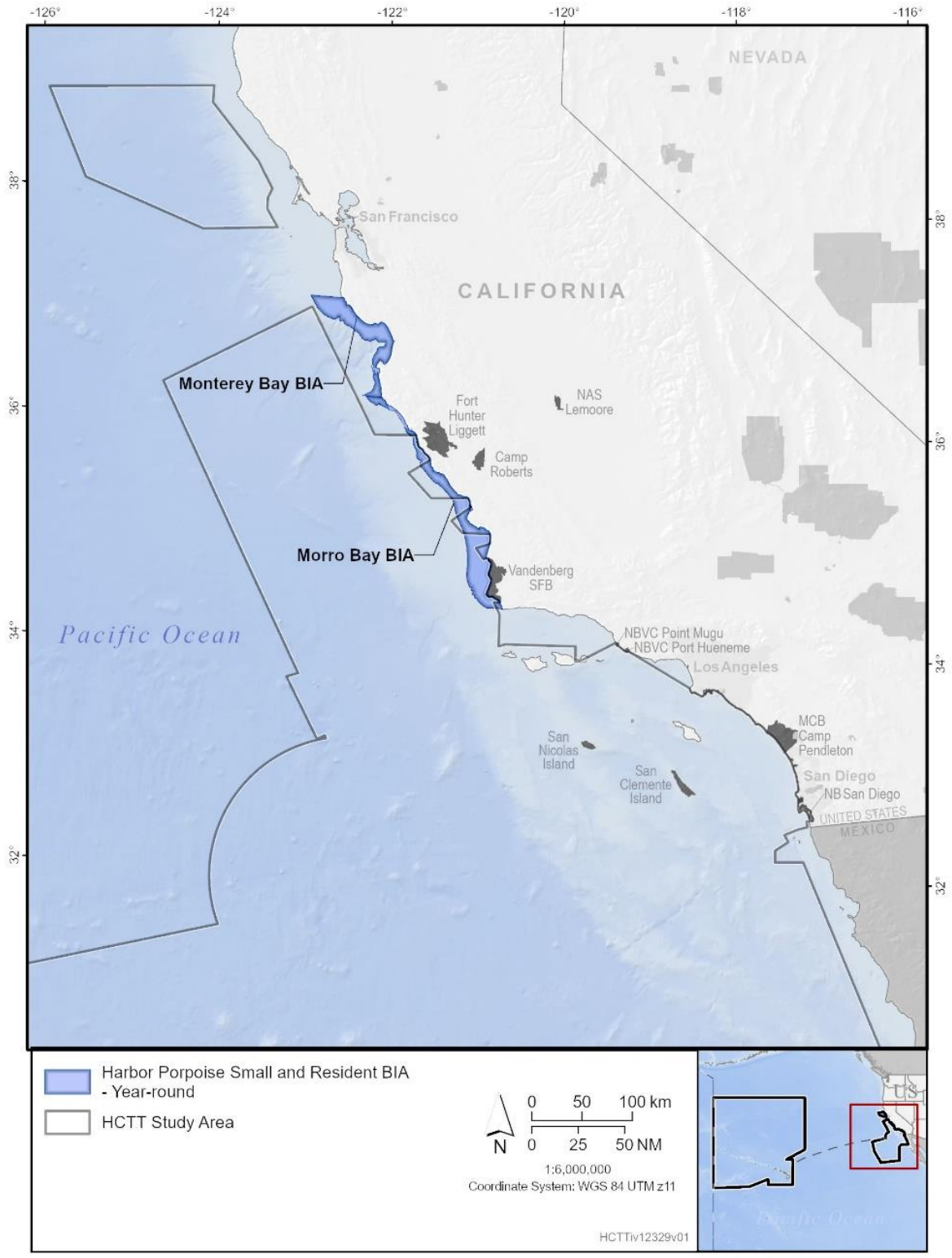


Figure K-24: Harbor Porpoise Small and Resident BIA Off California

K.4.5.2 Stressor Analysis

K.4.5.2.1 Explosives, Air Guns, and Sonar and Other Transducers

Explosives, air guns, and sonar and other active acoustic transducers create underwater acoustic energy potentially impacting the Monterey Bay and Morro Bay stocks of the harbor porpoise. Model-predicted effects from these stressors are presented in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

As shown in the Acoustic and Explosive Effects Analysis Report, 71 percent of effects to the Monterey Bay stock are predicted to occur in NOCAL Range Complex during the cold season, and the remaining 29 percent would occur in the same area during the warm season. Approximately 100 percent of effects were modeled to only result in behavioral takes, and less than one temporary threshold shift take would occur annually. No acoustic injury, physical injury, or mortality takes are expected. Additionally, approximately 100 percent of the behavioral takes to the Monterey Bay stock would result from training and testing activities involving sonar. For the quantitative analysis of effects to the species within the revised BIA, please see the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS).

For the Morro Bay stock, 73 percent of effects are predicted to occur in PMSR during the cold season, with 26 percent occurring during the warm season. The remaining one percent of effects would occur in the NOCAL Range Complex during the cold season. Ninety-eight percent of the behavioral, 22 percent of the temporary threshold shift, and 1 percent of the acoustic injury takes to the Morro Bay stock would result from training and testing activities involving sonar. The majority of temporary threshold shift and acoustic injury takes would result from training and testing activities involving explosives.

On average, individuals in the Morro Bay stock would be impacted about once per year and individuals in the Monterey Bay stock would be impacted less than once per year. The average risk of injury is negligible for both stocks, although injuries are predicted for the Morro Bay stock. The risk of a single non-auditory injury from explosive testing is low (less than one) in any year for the Morro Bay stock, but a non-auditory injury is shown in the maximum year of effects due to summing risk across seven years and following the rounding approach discussed in Section 2.4 (Species Impact Assessments) of the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS). Therefore, the risk of a non-auditory injury from explosives, is unlikely for the Morro Bay stock of harbor porpoises. The risk of auditory or non-auditory injury may be reduced through activity-based mitigation.

The limited instances of predicted behavioral and non-injurious auditory effects are unlikely to result in any long-term effects to individuals, although individuals who suffer an auditory injury in the Morro Bay stock may experience minor energetic costs. Long-term consequences to the stock are unlikely.

K.4.5.3 Action Proponent Requirements for Area-Specific Training and Testing

The portion of the harbor porpoise BIAs within the California Study Area do not extend beyond 50 NM from the coastline and have limited overlap with training sites within the California Study Area. Spatially, harbor porpoises may be present within the nearshore coastal and inland waters off California north of Point Conception. Temporally, harbor porpoises may be present year-round.

The training and testing areas encompassed by the harbor porpoise BIAs are relatively small but do provide critical water space (i.e., amphibious approach lanes) necessary to conduct amphibious training by forces from sea to inland military ranges in Central California (e.g., Fort Hunter Liggett and Camp Roberts). There are no alternate routes for amphibious forces to access the shore near the inland ranges.

K.4.5.4 Harbor Porpoise Small and Resident Area Geographic Mitigation Assessment

As discussed in Section K.4.5.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that the overwhelming majority of effects to the Monterey Bay and Morro Bay stocks of the harbor porpoise would occur in the NOCAL Range Complex and PMSR from training and testing activities involving sonar during the cold season. However, most effects are expected to be behavioral and non-injurious and are unlikely to result in any long-term effects to individuals. Scientific data does not support a conclusion that significant effects on harbor porpoises are occurring from Navy training and testing activities. Therefore halting, reducing, or otherwise limiting the use of explosives, air guns, or sonar and other transducers in the area when harbor porpoises may be generally present would not be effective at reducing effects on harbor porpoises.

Navy training and testing require the use of the California Study Area throughout the year. Restricting use of the area overlapped by the harbor porpoise BIAs when harbor porpoises are present would have significant effects on the Navy mission and readiness requirements. Geographic mitigation would not be effective at reducing significant effects on harbor porpoises within the California Study Area since none are occurring regardless of implementing mitigation. Therefore, based on the analysis presented above, geographic mitigation for harbor porpoises is not being proposed.

K.4.6 Killer Whale Small and Resident Population Area

K.4.6.1 Biological Considerations Applicable to the Killer Whale Small and Resident Population Area

NMFS recognizes eight killer whale stocks in the North Pacific U.S. Exclusive Economic Zone, three of which occur in the California Study Area: the West Coast Transient stock, the Eastern North Pacific Offshore stock, and the Eastern North Pacific Southern Resident stock (Carretta et al., 2023). For the Eastern North Pacific Southern Resident stock, Calambokidis et al. (2024) defined a small and resident BIA (parent and core) off the U.S. West Coast extending from Washington State south to Point Sur, California. Only the parent BIA is located within or adjacent to the Study Area (Figure K-25); the core BIA is north of the Study Area off the coast of Washington State. The BIA is the same spatial extent as the designated critical habitat for Southern Resident killer whales. Three separate pods comprise the Southern Resident stock, identified as the J, K, and L pods (Ford et al., 2000). The Southern Resident killer whale stock or DPS is listed as endangered under the ESA listed.

Southern Resident killer whales have seasonal shifts in distribution from the inland waters of the Salish Sea and Puget Sound in Washington and British Columbia to locations that can be up to hundreds of miles from Washington waters both north (as far as Southeast Alaska) or south as far as central California (Carretta et al., 2023; National Marine Fisheries Service, 2021). Of the three pods, the K and L pods appear to have a more extensive and seasonally variable offshore coastal distribution, with rare sightings as far south as Monterey Bay and central California in recent years; and the L pod has been observed in in Chatham Strait, Southeast Alaska (Hanson et al., 2017; National Marine Fisheries Service, 2021).

To better predict the pattern of distribution of the endangered Southern Resident killer whales off the Washington, Oregon, and Northern California coasts, researchers integrated visual sightings, location data obtained between 2012 and 2016 from satellite-tagged Southern Resident killer whales, and acoustic detections from underwater hydrophones obtained from 6 to 13 recorders deployed from 2011 to 2015 off the Washington, Oregon, and California coast (Hanson et al., 2018; U.S. Department of the Navy, 2018). Along the Pacific coast, the distribution of satellite-tag locations confirms that Southern

Resident killer whales generally inhabit nearshore waters over the continental shelf in waters less than 200 m deep and typically within 34 km from shore (Hanson et al., 2017). Over multiple years the data revealed that the killer whales spent the greatest amount of time near the mouth of the Columbia River and off Westport, Washington, north of the California Study Area (Hanson et al., 2018; Hanson et al., 2017; U.S. Department of the Navy, 2018). Based on the Hanson et al. (2018) analyses, members of the K and L pods may occur within the northern coastal portion of California Study Area from January to May.

Their seasonal range and preference for nearshore habitat reduces the likelihood that Southern Resident killer whales would occur in the Study Area, and, furthermore, that their occurrence would be limited to the southeasternmost portion of the NOCAL Range Complex and inshore of the PMSR in winter and early spring.

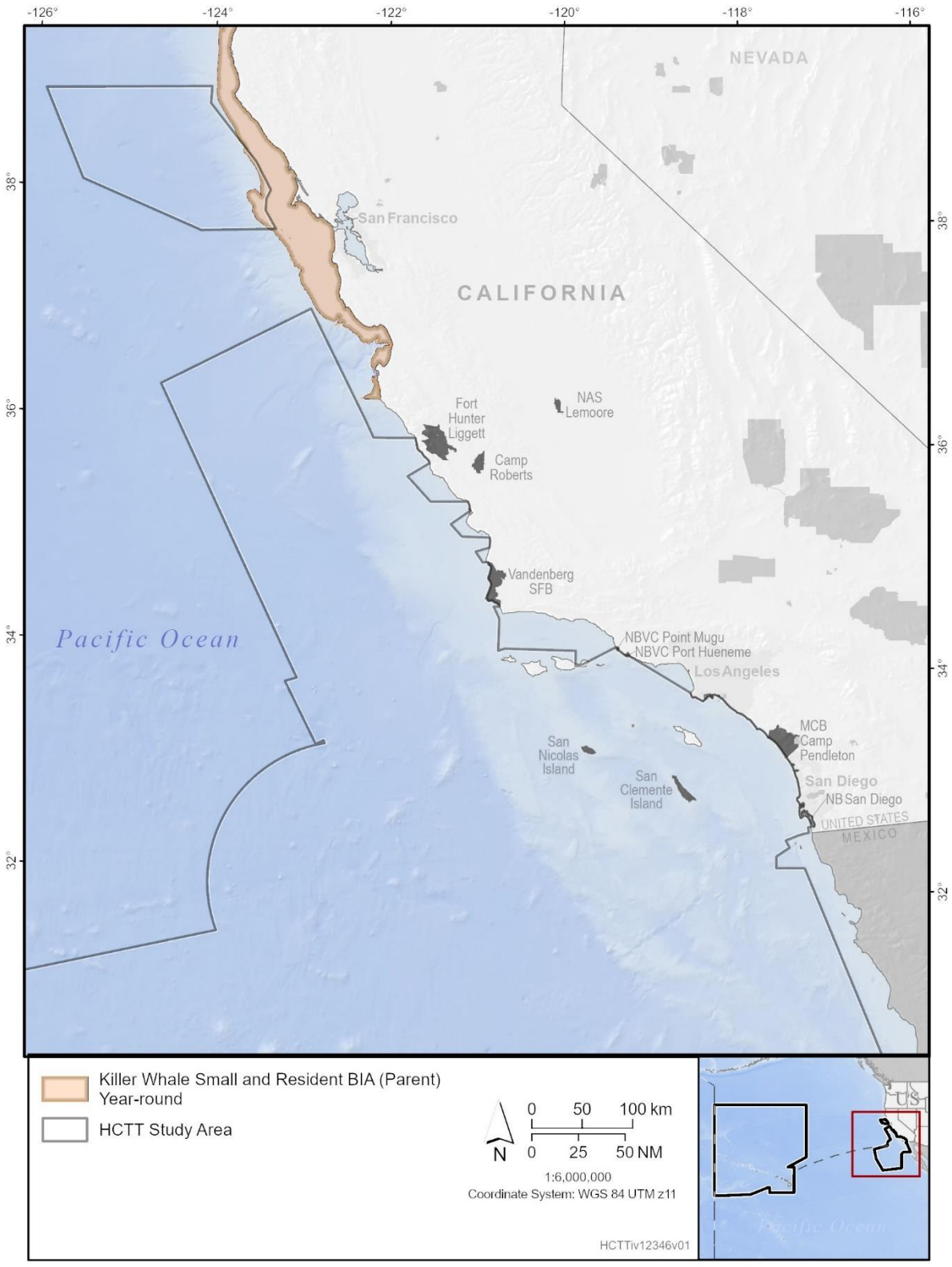


Figure K-25: Southern Resident Killer Whale Small and Resident BIA Off California

K.4.6.2 Stressor Analysis

K.4.6.2.1 Explosives, Air Guns, and Sonar and Other Transducers

The endangered southern resident stock of killer whales is largely residential to the Salish Sea, north of the HCTT Study Area. While a sub-set of Southern Resident killer whales (K and L pods) may travel into the NOCAL Range Complex from January to May, they typically do not travel south of Monterey, California. As shown in the Acoustic and Explosive Effects Analysis Report (Appendix E of this EIS/OEIS), there are no predicted effects to the endangered Southern Resident stock of killer whales.

K.4.6.3 Action Proponent Requirements for Area-Specific Training and Testing

The portion of the Southern Resident killer whale small and resident BIA within the California Study Area is only a small area the overlaps the southeasternmost portion of the NOCAL Range Complex. Spatially, this stock of killer whales may be present within the nearshore coastal waters off California north of Monterey Bay. Temporally, Southern Resident killer whales may be present from winter through early spring.

The training and testing areas in the NOCAL Range Complex encompassed by the Southern Resident killer whale BIA is relatively small but does provide critical capabilities necessary to conduct military readiness activities specific to aviation by forces homeported in Southern and Central California.

Given the operating tempo requirements for maintaining continual cycles of training and testing in the California Study Area, rescheduling activities outside or reducing the number of training or testing activities would not allow Navy to meet its readiness requirements. In addition, there is insufficient excess capacity to avoid or reschedule training and testing cycles at these locations given presence of the southern resident stock of killer whales from winter through early spring.

K.4.6.4 Killer Whale Small and Resident Area Geographic Mitigation Assessment

As discussed in Section K.4.6.2.1 (Explosives, Air Guns, and Sonar and Other Transducers), acoustic effects modeling indicates that there are no predicted effects to the southern resident stock of killer whales. Scientific data does not support a conclusion that effects on this stock of killer whales are occurring from Navy training and testing activities. Therefore halting, reducing, or otherwise limiting the use of explosives, air guns, or sonar and other transducers in the area when southern resident killer whales may be generally present would not be effective at reducing effects because none are occurring.

Navy training and testing require the use of the California Study Area throughout the year. Restricting use of the area overlapped by the Southern Resident killer whale BIAs when the stock is present would have significant effects on the Navy mission and readiness requirements. Geographic mitigation would not be effective at reducing effects on Southern Resident killer whales within the California Study Area since none are occurring regardless of implementing mitigation. In addition, the Northern California Large Whale Mitigation Area overlaps the portion southern resident killer whale BIA that is within the NOCAL Range Complex and provides benefit to the species by reducing the potential for adverse effects from military readiness activities using sonar. Therefore, based on the analysis presented above, specific geographic mitigation for Southern Resident killer whales is not being proposed.

K.5 Areas Identified during the NEPA Public Involvement Process

Comments received during the HCTT Draft EIS/OEIS public scoping and draft public comment period included suggestions that the Action Proponents avoid conducting activities in locations identified as important marine mammal habitat or areas that should otherwise no longer be used during the

proposed military readiness activities because of the presence of particular marine mammal species. The comments identified areas in both the Hawaii and California Study Areas. A review and evaluation of the areas is presented below and organized by geographic area in Sections K.5.1 (Hawaii Public Comment Mitigation Area Assessment) and K.5.2 (California Public Comment Mitigation Area Assessment).

K.5.1 HAWAII PUBLIC COMMENT MITIGATION AREA ASSESSMENT

K.5.1.1 Papahanaumokuakea National Marine Sanctuary

One comment identified the Papahanaumokuakea NMS as an area the Action Proponents should avoid or limit activities within. The rationale provided by commenters for considering the NMS as a potential mitigation area is summarized in this paragraph. The Papahanaumokuakea NMS is one of the largest fully protected conservation areas in the world. It encompasses 582,578 square miles of the Pacific Ocean. The area was originally created as a Marine National Monument in 2006, was expanded in 2016 to protect an exceptional array of natural and cultural resources, and was officially designated as a NMS in 2025. The 1,350-mile stretch of coral islands, seamounts, banks, and shoals supports an incredible diversity of coral, fishes, birds, marine mammals, and other flora and fauna, many of which are unique to the Hawaiian Islands. Many of the islands and shallow water environments are important habitats for rare species such as the threatened green turtle and the endangered Hawaiian monk seal, as well as the 14 million seabirds representing 22 species that breed and nest there. Land areas also provide a home for four species of bird found nowhere else in the world, including the world's most endangered duck, the Laysan duck. Papahanaumokuakea is also of great importance to Native Hawaiians, with significant cultural sites found on the islands of Nihoa and Mokumanamana, both of which are on the National and State Register for Historic Places (National Oceanic and Atmospheric Administration, 2023).

K.5.1.1.1 Action Proponent Requirements for Area-Specific Training and Testing

The waters surrounding the Hawaiian Islands have supported naval training and testing for decades and are used almost daily by naval forces to conduct all phases of training and testing, from basic unit-level events to complex major training exercises. Military readiness depends on access to the training and testing areas near force concentration areas like Pearl Harbor, Hawaii.

The Proposed Action includes activities conducted east of Nihoa Island and inside the eastern edge of the Papahanaumokuakea NMS boundaries. The Sanctuary also overlaps a significant portion of the Temporary Operating Area (TOA), described in Appendix H, Section H.2.1.2. As stated in Section H.2.1.2, the TOA is used on a limited basis for testing activities such as missile launches from PMRF on Kauai. Training in the TOA can include live missile firing associated with ballistic missile defense exercises and vessel transits.

K.5.1.1.2 Mitigation Area Assessment

As stated in Table 6-2 in Chapter 6 of this EIS/OEIS, the Navy conducts activities in a manner that avoids, to the maximum extent practicable and consistent with operational requirements, effects on Sanctuary resources and qualities. Vessels and aircraft used in the conduct of military training and testing would be operated in a manner consistent with the requirements of Presidential Proclamations 8031 and 9478, so far as is practicable. As analyzed in Section 3.10 (Cultural Resources), no adverse effects on cultural resources would occur because of the Proposed Action.

Quantitative modeling to predict acoustic effects on marine mammals and sea turtles was conducted for the Papahanaumokuakea NMS using the Navy Acoustics Effect Model. The results showed that over 99

percent of predicted exposures to marine mammals and sea turtles would result in behavioral responses or temporary threshold shifts in hearing sensitivity. These exposures would result from the propagation of sound from activities using sonar and other transducers, explosives, and air guns conducted outside of the Sanctuary, not from activities conducted within the Sanctuary. While other activities would be conducted within the Sanctuary as discussed above in Section K.5.1.1.1 (Action Proponent Requirements for Area-Specific Training and Testing), none of these activities are expected to adversely affect sanctuary resources, including marine mammals and sea turtles.

Additionally, predicted exposures are not reduced to account for activity-based mitigation and therefore, it is likely that some model-predicted exposures would not occur during actual events due to implementation of activity-based mitigation measures. If Lookouts sight a marine mammal within or entering a mitigation zone, the use of sonar and explosives would be delayed, the activity relocated, or sonar powered down or ceased, as appropriate for the acoustic source. See Chapter 5 of this EIS/OEIS for detailed descriptions of activity-based mitigation. In addition to activity-based mitigation, activity-specific monitoring requirements are followed whenever an activity occurs in the Study Area, which would include the areas surrounding the Sanctuary.

The Action Proponents consulted with the Office of National Marine Sanctuaries pursuant to Section 304(d) of the National Marine Sanctuaries Act and determined that the Proposed Action would not result in injury to any sanctuary resources, result in adverse effects on the viability of a sanctuary resource, or cause the loss of a sanctuary resource at the population level. The Office of National Marine Sanctuaries concurred with the Action Proponents' determination. Therefore, the alteration of ongoing or proposed activities in, or avoidance of, the areas as suggested in the comment, is not warranted.

K.5.1.2 General Biological Assessment of Seamounts in the Hawaii Study Area

A comment on the HCTT Draft EIS/OEIS suggested that the Navy designate a year-round mitigation area to protect Cross Seamount, and that the Navy consider habitat-based management measures for other nearby seamounts. Seamounts have been traditionally defined as any extinct or active underwater volcano rising more than 1 km above the seafloor (Kennett, 1982). With advances in ocean surveying, bathymetric features rising only 50–100 m above the seafloor may now be included as seamounts in some classifications (Kim & Wessel, 2011). Kvile et al. (2014) reported on a comprehensive effort to assess current knowledge of the world's seamounts with the ultimate goal of collecting standardized data on seamounts and characterizing their ecological functions (Seamount Ecosystem Evaluation Framework, 2013). Their analysis shows that seamounts are numerous, found throughout the world's oceans, and that only a small percentage have been scientifically analyzed. The limited data highlights a general lack of knowledge and understanding of why some seamounts aggregate marine fauna and others do not.

In Hawaiian waters, the physical characteristics of seamounts mentioned in the comments have recently been measured with a relatively high degree of accuracy using multi-beam sonar; however, except for Cross Seamount, no research has been conducted to characterize the ecological productivity at these seamounts. Morphological characteristics as shown in Table K-9 and other physical oceanographic conditions are critical to a seamount's influence on biological productivity. In particular, the depth of the summit and surrounding area of a seamount is an important indicator of the potential for sustained primary production (i.e., photosynthesis by plants) and support for higher trophic level species (e.g., marine mammals).

With regard to marine mammals, researchers have focused on seamounts having a summit that is within or near the euphotic zone (Hann et al., 2016; Morato et al., 2008). Of the seamounts listed in Table K-9, only the summit of Cross Seamount approaches the height of the euphotic zone, although McDonald et al. (2009) note that only sunlight sufficient for vision actually reaches the summit. Seventeen other named seamounts were also identified for consideration given they, "… exhibit levels of productivity capable of supporting commercial fisheries," according to the comment. However, the summits of these seamounts are much deeper (631 m to in excess of 3,000 m) and far below the depth considered by the Western Pacific Regional Fishery Management Council to sustain groundfish fisheries (Western Pacific Regional Fishery Management Council, 2009).

While the physical characteristics of some seamounts have been linked to localized increases in biodiversity, which can aggregate pelagic predators and their prey (Baumann-Pickering et al., 2016b), the focus on seamounts as a generic class of bathymetric feature is simplistic relative to the level of analysis needed to adequately evaluate seamounts and their association with productivity; see for example (Pitcher et al., 2007; Pitcher et al., 2010). In Hawaii, the Western Pacific Regional Fishery Management Council has designated all escarpments and slopes between approximately 40 m and 280 m as habitat areas of particular concern for fisheries (Western Pacific Regional Fishery Management Council, 2009).

Many bathymetric features (e.g., an escarpment, ridge, slope, bank, or seamount) have the potential to influence productivity, biodiversity, and potentially the presence of fishery resources or marine mammals; however, the complementary oceanographic conditions (e.g., ocean fronts) must also be present for biological production (for example the escarpment off Hawaii Island's Keahole Point; see (Heenehan et al., 2017; Norris & Dohl, 1980). Therefore, a blanket generalization expressing the need to protect seamounts, or any similar type of generic bathymetric feature, is not amenable to analysis or feasible given the wide variation in the morphological characteristics of these features and their limited and poorly understood potential to support biological productivity and biodiversity (Hann et al., 2016; Morato et al., 2008). The conditions necessary to support productivity in the ocean is also temporally dynamic and results from the complex interaction of seasonal temperature fluctuations as well as the variable occurrence of oceanic fronts, which, themselves, may be the oceanographic feature driving biological productivity above or near a seamount rather than the bathymetric feature (Morato et al., 2015).

At a seamount in the Northern Line Islands, researchers determined that sea surface temperature correlated with the seasonal presence or absence of particular beaked whale species (Baumann-Pickering et al., 2016b). The presence or behavior of other marine mammal species correlated with changes in oceanographic conditions, including surface salinity, sea surface height, and primary productivity (Baumann-Pickering et al., 2016b). While bathymetry can influence these conditions, changes in oceanographic conditions are not limited to fixed locations, such that a species influenced mainly by changes in sea surface temperature may or may not aggregate near a bathymetric feature, such as a seamount.

A brief, general description of seamounts is therefore helpful for putting these comments and the ecological role of seamounts into context. Furthermore, and given the extreme variation in features generically referred to as seamounts, any analysis of potential impacts on seamount ecosystems and the marine life that they support, must first consider the inherent variation between different types of seamounts.

Table K-9: Characteristics of Seamounts Identified in HCTT Draft EIS/OEIS Public Comments

Seamount Name	Height of Seamount Above Seafloor (meters)	Depth of Summit (meters)	Depth around seamount (meters)	Area (km^2)	Max Width (km)	Max Length (km)
Cross	3,936	346	4,282	667	25	28
Pensacola	3,572	631	4,203	611	23	31
Bishop	4,020	756	4,776	720	27	31
McCall	3,535	877	4,412	1,634	29	60
Washington	3,077	929	4,006	488	21	25
Swordfish	3,875	969	4,844	892	32	27
Finch	3,830	1,026	4,856	747	27	30
Daly	3,362	1,243	4,605	397	23	24
Ellis	2,869	1,455	4,324	676	15	51
Jagger	3,083	1,555	4,638	930	25	46
Brigham	2,825	1,713	4,538	647	37	22
Perret	1,696	2,130	3,826	187	6	24
Palmer	2,354	2,168	4,522	259	16	16
Day	2,000	2,300	4,300	255	18	14
Dutton	1,933	2,592	4,525	267	16	23
Clark	1,268	2,705	3,973	93	20	8
Powers	1,545	2,883	4,428	109	15	10
Indianapolis	1,592	3,152	4,744	303	21	18

Source: 50 m Bathymetry Grid at http://www.soest.hawaii.edu/HMRG/multibeam/bathymetry.php

K.5.1.2.1 Cross Seamount

The acoustic detections of beaked whales at Cross Seamount (Baumann-Pickering et al., 2014; McDonald et al., 2009) are part of the rationale stated in the comments for recommending the designation of a year-round management area to protect seamounts. The comment identified the location of Cross Seamount simply by a set of coordinates, "… approximately 18°40' North latitude and 158°1' West longitude." No bounded area or distance from this single geographic point was provided to characterize the biologically important habitat for which mitigation was recommended. Multi-beam sonar bathymetry data available from the University of Hawaii indicates Cross Seamount extends over an area of approximately 670 km^2, has an elevation of 3,936 m above the seafloor, and comes within 346 m of the surface. Baumann-Pickering et al. (2014) identify the location of Cross Seamount as 18° 43.343" North latitude and 158° 15.221" West longitude.

Beaked whales produce sounds that are frequency modulated echolocation pulses, which are specific to species. For beaked whales in Hawaii and the North Pacific, six of these species-specific echolocation pulses are classifiable to the species, while four of these beaked whale sounds types cannot be assigned to a species (Baumann-Pickering et al., 2016a). Acoustic recording devices at Cross Seamount have documented the presence of sounds from beaked whales and other marine mammal species-specific sounds at that location (Baumann-Pickering et al., 2010; Baumann-Pickering et al., 2014; Baumann-Pickering et al., 2016a; McDonald et al., 2009). Cross Seamount was highlighted in the comment as

having “the greatest conservation priority” and as being particularly important for several species of beaked whales and possibly “a potentially rare or evolutionary distinct species of beaked whale.” Detections of the unique echolocation call of Cross Seamount beaked whales (BWC signal) have been recorded from the Mariana Islands in the western North Pacific to waters off the Baja California Peninsula, Mexico in the eastern North Pacific (McCullough et al., 2024), suggesting that the Cross Seamount is not of particular importance to this beaked whale species. Cross Seamount is likely one of many locations where the shallow-water, nocturnal foraging behavior unique to this beaked whale species occurs.

It is important to note that Cross Seamount is the only open ocean bathymetric feature in the area of the Hawaiian Islands where a passive acoustic monitoring device has been installed long term for the purpose of detecting the presence of marine mammals. Some of the first acoustic sampling of bathymetrically featureless areas off Southern California detected many beaked whales over an abyssal plain and not associated with slope or seamount features, which counters a common misperception that beaked whales are primarily found over slope waters, in deep basins, or over seamounts (Griffiths & Barlow, 2016). Since the 2005–2006 Cross Seamount survey, a subsequent passive acoustic survey was conducted from December 11, 2014 to January 26, 2015, in the Hawaii Range Complex using an autonomous glider fitted with an acoustic receiver (Klinck et al., 2015a). The survey began and ended approximately 120 km south of Honolulu, Oahu, navigating a circular track through deep ocean waters that intermittently crossed over or near multiple seamounts, including Cross Seamount, and relatively featureless areas in between. Sounds from Blainville’s beaked whales were detected in the open ocean areas and at Brigham Seamount, but not at Cross Seamount or any of the other seamounts sampled along the glider’s route. Sounds identified previously (Baumann-Pickering et al., 2014) as belonging to ginkgo-toothed beaked whales were detected at Cross Seamount but also at four other locations not associated with any seamount or other known bathymetric feature (Klinck et al., 2015a).

A long-term passive acoustic monitoring study conducted at PMRF also identified BWC signals, as well as the calls from other known beaked whale species (Manzano-Roth et al., 2022). The study confirms that Cross Seamount beaked whales occur and forage at other areas in the Hawaiian Islands. The data, collected from 2007 to 2019, also showed that Cross Seamount beaked whales foraged exclusively at night and mainly at depths from 625 to 1,000 m over steep bathymetry. When Navy training activities using mid-frequency active sonar were conducted at PMRF, the study revealed that foraging dive behavior was reduced during and for up to 3 days following an event but ultimately returned to baseline levels after the event (Manzano-Roth et al., 2022).

In summary for Cross Seamount, the available science indicates that the bathymetric feature is used as foraging habitat for multiple beaked whale species, including the Cross Seamount beaked whale identified by the BWC signal. Passive acoustic monitoring has detected the BWC signal throughout the North Pacific Ocean, including additional locations within the Hawaiian Islands (Manzano-Roth et al., 2022; McCullough et al., 2024). The location of a bathymetric feature is not necessarily the driver for aggregating biological productivity and biodiversity, including the presence of marine mammals. Additional research, including surveying for marine mammals in relation to a variety of oceanographic conditions, in areas with diverse bathymetry, and for longer durations that span seasons is needed to determine the range of habitat preferences for the beaked whale species producing the BWC signal (possibly the ginkgo-toothed beaked whale) and other beaked whales in Hawaii.

K.5.1.2.2 Action Proponent Requirements for Area-Specific Training and Testing

The general area and the unique bathymetry found in W-194 beyond 32 NM from the west side of Hawaii Island replicates operationally significant bathymetry encountered during deployments to both the Western Pacific and Middle East. Activities that may occur anywhere in the Hawaii Study Area include the following (see Appendix A, Activity Descriptions, for further details):

- Chaff Exercise
- Visit, Board, Search, and Seizure
- Air-to-Surface Gunnery Exercise
- Sea Bombing Exercise
- Sinking Exercise (will not occur on the Cross Seamount because Sinking Exercise requires depths of 6,000 ft. or greater)
- Surface Warfare and Anti-submarine Warfare Torpedo Exercise, Anti-submarine Warfare Tracking Exercise
- Anti-submarine Warfare major training exercises and Integrated/Coordinated Anti-submarine Warfare training (e.g., Rim of the Pacific, Undersea Warfare)
- Electronic warfare operations
- Mine Countermeasure exercise
- Personnel insertion/extraction

It is unlikely that Cross Seamount would be used for independent unit-level training, because it is impractically far from port. This portion of the Hawaii Study Area is used for larger coordinated events where the bathymetry is important to challenge operators and increase the realism and value of the training. For example, seamounts may represent fictional islands in a scenario to mimic real-world areas of interest. The relatively large group of seamounts in the open ocean south of the main Hawaiian Islands offers challenging bathymetry in the open ocean far away from civilian vessel traffic and air lanes where ships, submarines, and aircraft are completely free to maneuver. Sonar may be used by a variety of platforms in support of anti-submarine warfare events and torpedo exercises. Commanding Officers may always conduct a number of opportunistic unit-level training activities concurrent with major exercises.

Cross Seamount is in the Luna Central Air Traffic Control Assigned Airspace just south of Special Use Airspace W-193. Luna Central is available to extend the Special Use Airspace and is activated to provide more southern area airspace to W-193 when necessary. Major training events like Rim of the Pacific may require activating Luna Central as an extension of W-193. Activities utilizing in-water explosives, such as underwater detonations, bombing exercises, or torpedo exercises, will not usually be conducted in Luna Central unless it has been extended as Special Use Airspace.

Nearby seamounts include Indianapolis Seamount and Jagger seamount, located approximately 35 NM and 45.5 NM from the west side of Hawaii Island respectively, in W-194. As part of the arc of seamounts that include Cross Seamount, they are important features for ships, air platforms, and submarines to execute realistic threat tactics. The loss of this geography could result in reduced training effectiveness for submarine, surface ship, and air crews. To effectively train in and around this unique bathymetry, operators must be able to freely search throughout the area surrounding the seamounts. In addition, to execute realistic anti-submarine warfare training, overlapping airspace and sea space is needed to simulate tactical prosecution.

K.5.1.2.3 Mitigation Area Assessment

At intensively used Navy instrumented ranges in waters surrounding Hawaii and off Southern California, years of scientific findings have documented high densities of beaked whales and long-term (multi-year) residency by individual beaked whales (Baird et al., 2015a; Baird et al., 2015b; Debich et al., 2015a; Debich et al., 2015b; Falcone & Schorr, 2011a, 2012, 2013, 2014; Falcone et al., 2009; Henderson et al., 2015b; Hildebrand et al., 2009; Lammers et al., 2015a; Manzano-Roth et al., 2013b; Širović et al., 2016b; Smultea, 2014). This long-term scientific record suggests that Navy training and testing activities, including those that use sonar and explosives, do not deter beaked whales from inhabiting an area where these activities have been occurring for decades, including within the Hawaii Range Complex where some of the seamounts identified in the comments are located. Considering that other oceanographic features or conditions, such as changes in sea surface temperature, have been shown to influence the behavior of beaked whales and other odontocetes (Baumann-Pickering et al., 2016b) and that these features are not necessarily linked to a particular seamount or seamounts in general, mitigation that limits activities at seamounts is not likely to increase the effectiveness of the Action Proponent's current mitigation measures.

This area was suggested for mitigation based on its rich pelagic biodiversity and high productivity and as foraging habitat for beaked whales. The recommendation also suggested that the Navy consider other nearby seamounts within the Hawaii Range Complex for habitat-based management measures, given they are considered productive long-line fishing grounds for top predators. Cross Seamount is not in any way more important to Navy activities than any of the other surrounding seamounts, but it is centrally located in the middle of a group of seamounts, and potential mitigation restricting Navy activities (e.g., restricting vessel movement or the use of sonar) around Cross Seamount could inhibit free maneuver and the full implementation of tactics, techniques, and procedures, reducing the realism of events in that portion of the Hawaii Study Area. The collection of seamounts south of the main Hawaiian Islands is the only group of seamounts in the Hawaii Study Area, making it unique. While this area was suggested for multiple species, this appendix will consider mitigation using beaked whales as a proxy because they were specifically highlighted in the proposal and are one of the most sensitive marine mammal groups to human-made sound studied to date.

Behavioral response research has demonstrated that beaked whales are sensitive to sound from sonars and usually avoid sound sources by 10 or more kilometers (see Appendix C, Biological Resources Supplemental Information). These are well beyond the ranges to temporary threshold shift for mid-frequency cetaceans such as beaked whales. Therefore, impacts on beaked whales are most likely to be behavioral reactions (e.g., they may startle, break off feeding dives, and avoid the area of the sound source). In research done at the Navy's fixed tracking range in the Bahamas and Hawaii, animals leave the immediate area of the anti-submarine warfare training exercise but return within a few days after the event ends. Significant behavioral reactions seem likely if beaked whales are exposed to anti-submarine sonar within a few tens of kilometers, especially for prolonged periods (a few hours or more). The types of coordinated anti-submarine warfare events and major training events that take places in this area involve multiple sonar systems and can last for a period of days, making significant responses more likely.

Cross Seamount only takes up a very small portion of the Hawaii Range Complex, and sonar use in this area would be relatively infrequent (Rim of the Pacific typically only occurs every 2 years, and this area is not always used). No species of beaked whale are known to be resident on Cross Seamount. Additionally, more recent acoustic sampling by NMFS with drifting hydrophones of bathymetrically

featureless areas off Southern California detected many beaked whales over abyssal plains that were not always associated with slope or seamount features, which counters a common misperception that beaked whales are primarily found over slope waters, in deep basins, or over seamounts (Griffiths & Barlow, 2016). Some impacts on beaked whale natural behaviors could occur due to sonar and other transducers. However, abandonment of Cross Seamount by beaked whales is not expected to occur because the populations of beaked whales and other odontocetes on Navy fixed ranges that have been operating for decades appear to be stable.

Beaked whales currently number almost 17,000 individuals in the California, Oregon, and Washington and Hawaiian stocks. It is unlikely the same animal would have a significant behavioral response to sonar more than a few times per year due to exposure to sound from sonar. A few behavioral reactions in an individual animal within a given year, even if some are significant, are unlikely to have any long-term consequences for that individual. Considering these factors, long-term consequences for the species or stock would be unlikely. Therefore, it is not clear that additional mitigation for sonar or other transducers on Cross Seamount or other seamounts in the area would reduce impacts on beaked whales, or reduce the availability of prey for subsistence uses. Existing protective mitigation measures would likely reduce or avoid impacts on beaked whales feeding within this area.

Given the tens of kilometer ranges at which beaked whales avoid sonar, sound from sonar or other transducers nearby from outside a hypothetical mitigation zone could still expose animals foraging on Cross Seamount to acoustic stressors. A hypothetical mitigation zone[s] around Cross Seamount and possibly other nearby seamounts that would be large enough to preclude behavioral reactions could inappropriately segment the area available for realistic maneuvering and make training ineffective. Confining activities to only the portions of the area that lie outside hypothetical seamount mitigation zones could limit the sea space available to maneuver in a realistic way as required by tactics and to de-conflict when multiple platforms are present. Ships require sea space for safety of navigation, appropriate stand-off ranges when deploying weapons, and the prevention of mutual interference between sonar and electronic emissions. The Navy would not be able to stop training with sonar on all seamounts because Navy platforms must operate in a coordinated manner on similar bathymetry in the real world.

Based on the best available science, beaked whales may exhibit a significant behavioral reaction due to sonar and other transducers, but behavioral reaction would not result in long-term consequences for individuals or populations. However, because of a lack of scientific consensus regarding the causal link between sonar and stranding events, NMFS has stated in a letter to the Navy dated October 2006 that it "cannot conclude with certainty the degree to which mitigation measures would eliminate or reduce the potential for serious injury or mortality." Neither NMFS nor the Navy anticipates that marine mammal stranding or mortality will result from the operation of sonar during Navy activities within the Study Area. Additionally, through the MMPA process (which allows for adaptive management), NMFS and the Navy will determine the appropriate way to proceed in the event that a causal relationship was found between Navy activities and a future stranding.

Odontocetes overall have shown little responsiveness to impulsive sounds, although it is likely that beaked whales are more reactive than most other odontocetes. It is reasonable to expect that animals may leave an area of more intense explosive activity for a few days; however, most explosive use during Navy activities is of short duration, consisting of only a single or few closely timed explosions with a limited footprint, and usually consisting of a single target or detonation point. Because noise from most activities using explosives is short term and intermittent and because detonations usually occur within a

small area, behavioral reactions from beaked whales are likely to be of short term and moderate severity. This minor consequence for individuals is unlikely to have any long-term consequences for the species or stocks. Given that this area is rarely used for in-water explosives training and testing, long-term consequences for the population would be unlikely.

While the Navy will continue to implement procedural mitigation measures throughout the Study Area, implementing new geographic-based mitigation measures in addition to ongoing procedural mitigation measures within the vicinity of Cross Seamount would not be effective at reducing adverse impacts on beaked whales or other marine mammal populations. The Navy has been training and testing in the broad ocean area around Cross Seamount with the same basic systems for over 40 years, and there is no evidence of any adverse impacts having occurred. In other locations and Navy ranges such as in Southern California and off the coast of Kauai, where Navy training and testing is much more frequent and intense in comparison to Cross Seamount, beaked whales and other marine mammal populations are thriving. The broad ocean area around Cross Seamount and the seamounts to the north are unique in that there are no similar broad ocean areas in the vicinity of the Hawaiian Islands that are not otherwise encumbered by commercial vessel traffic and commercial air traffic routes. In addition to this safety consideration, reducing or limiting Navy training and testing at or around Cross Seamount and other seamounts in Hawaiian waters would not be practicable and would reduce the effectiveness of training and testing if pieces of the ocean environment are unavailable for full tactical consideration during Navy events. In summary, geographic mitigation would not reduce adverse impacts on any marine mammal population at Cross Seamount or other seamounts when balanced with the mitigation's practicality of implementing. Therefore, the alteration of ongoing or proposed activities in, or avoidance of, the area as suggested in the comment, is not warranted.

K.5.1.3 Areas off O'ahu, Kaua'i, and Ni'ihau

The Natural Resources Defense Council (NRDC) commented on the HCTT Draft EIS/OEIS, stating "[t]he waters off O'ahu, Kaua'i, and Ni'ihau include a number of S-BIAs (parent and child) for a variety of species, including: the Kaua'i/Ni'ihau/O'ahu rough-toothed dolphin population; the Kaua'i/Ni'ihau island-associated stock of bottlenose dolphins; the O'ahu stock of insular pantropical spotted dolphins; the Kaua'i/Ni'ihau and O'ahu/Maui Nui populations of spinner dolphins; the O'ahu-Maui Nui pygmy killer whale population; MHI insular false killer whales; MHI short finned pilot whales, including core habitat areas for the western, central, and eastern communities; and Blainville's beaked whales off O'ahu. Humpback whale parent and child RBIAs are also found in this area." NRDC recommended that the Navy should further consider the implementation of mitigation areas off O'ahu, Kaua'I, and Ni'ihau.

The Action Proponents have considered these areas, and an analysis of the BIAs in the Hawaii Study Area for the species mentioned in NRDC's comment is provided in Section K.3 (Biologically Important Areas Within the Hawaiian Study Area) of this appendix. Therefore, for the reasoning provided throughout Section K.3 in the analyses of these areas, the Navy alteration of ongoing or proposed activities in, or avoidance of, the areas as suggested in the comment, is not warranted.

K.5.1.4 Core Small and Resident BIAs off Oahu, Lanai, and Molokai

The Marina Mammal Commission (MMC) commented on the HCTT Draft EIS/OEIS, recommending that the Navy include the core and small resident BIAs off Oahu, Lanai, and Molokai in the Hawaii 4-Islands Mitigation Area, which prohibits use of MF1 and MF1C hull-mounted surface ship sonar from 15 November 15 to April 15 and in-water explosives year-round.

The Navy evaluated this recommendation and determined that the Hawaii 4-Islands Mitigation Area could be expanded in the areas north of Molokai and southwest of Lanai without significantly impacting proposed training and testing activities. The expansion does not include all of the false killer whale small and resident BIA, but it does increase the overall size by approximately 2,000 km^2 (Figure K-26).

K.5.2 California Public Comment Mitigation Area Assessment

K.5.2.1 San Nicolas Island Mitigation Area

The MMC also recommended that the Action Proponents continue to use the existing San Nicolas Island Mitigation Area for geographic mitigation. This area is currently being implemented as part of the 2018 HSTT EIS/OEIS, as discussed in Section K.1.1.3.3 (Mitigation Areas for Marine Mammals in the California Study Area) of this appendix. However, during the preparation of the HCTT Draft EIS/OEIS, the Navy reevaluated all geographic mitigations to account for updated science as well as new activities in the Proposed Action and the expansion of the California Study Area. The blue whale core feeding BIA shown in Figure K-19 overlaps with the existing San Nicolas Island Mitigation Area (Figure K-6), which is currently in effect from June 1 through October 31. However, as described in Appendix A of the U.S. Navy Marine Species Density Database Phase IV Technical Report for the Hawaii-California Training and Testing Study Area (U.S. Department of the Navy, 2024), differences in model-based predictions used from Phase III to Phase IV estimate a lower density of blue whales in the waters of the Southern California Bight than previously estimated. As a result of the decrease in density as well as the analysis presented in Section K.4 (Biologically Important Areas within the California Study Area), the Action Proponents proposed two new mitigation areas within the California Study Area (see Section K.6.1.1.1) that benefit biologically important feeding behavior for large whales. These areas would be in place during the same time frame as the existing San Nicolas Island Mitigation Area (June 1 through October 31) and cover a much larger portion of the updated blue whale, and other large whale, BIAs analyzed in this appendix. These proposed mitigation areas are also strategically placed to overlap with areas that have high densities of large whales, including blue whales, during summer and fall, as shown in U.S. Department of the Navy (2024).

The San Nicolas Island Mitigation Area was developed for the HSTT Phase III EIS/OEIS Study Area where it overlapped the PMSR and was practicable to implement because the area was not required for sonar or in-water explosives, due to its location at that time within the HSTT Study Area. For this EIS/OEIS, this mitigation area is no longer practicable to implement because of the large area required for Anti-Submarine Warfare Training and Torpedo Testing Activities, which could include sonar and in-water explosives. Furthermore, due to the changes in the BIAs since Phase III, this small discrete portion of a much larger BIA provides limited marine mammal protection compared to the new, significantly larger, Central California Large Whale Mitigation Area. Therefore, the alteration of ongoing or proposed activities in, or avoidance of, the areas as suggested in the comment, is not warranted.

K.6 Mitigation Areas to be Implemented

The existing and proposed mitigation areas identified in this section were developed to provide further protection for marine mammals during military readiness activities in areas that the best available science suggests are particularly important to species or stocks for foraging, migrating, or reproduction either year-round or for part of the year (depending on the species). Implementing these mitigation areas off of California and Hawaii would likely be effective in avoiding or reducing adverse effects on certain marine mammal species, stocks, or populations in these areas, and were determined to be practical to implement without impacting the effectiveness of military readiness. The mitigation could

also help the Action Proponents avoid or reduce effects on other marine species that are present in the mitigation area during certain times of year or year-round.

The existing and proposed mitigation areas are designed to help the Action Proponents further avoid or reduce the level of adverse effects from sonar, explosives, or physical disturbance and strike on marine mammals that inhabit, feed in, reproduce in, or migrate through the areas. However, due to training requirements, the Action Proponents do not have the flexibility to relocate, restrict, or limit all military readiness activities throughout the entirety of the HCTT Study Area. The Action Proponents acknowledge the importance of certain habitats for species and stocks of marine mammals, particularly for certain biologically important life processes (e.g., foraging, migration, or reproduction) or ecological function, and have balanced the need for certain training and testing environments needed in order to achieve readiness and meet their Congressionally mandated obligations when establishing the proposed mitigation areas.

Training requirements are designed to provide the experience needed to ensure service members are properly prepared for operational success. Training requirements have been developed through many years of iteration, lessons learned, and refinement, and are designed to ensure service members achieve the levels of readiness needed to properly respond to the many contingencies that may occur during an actual mission. The Proposed Action does not include training beyond levels required for maintaining satisfactory levels of readiness due to the need to efficiently use limited resources (e.g., fuel, personnel, and time). Reductions in training would prevent service members from achieving satisfactory levels of readiness needed to accomplish their missions and would increase risk to service members when deployed.

Major training exercises, as defined in the EIS/OEIS, are training events that bring together the component elements of a large force (e.g., Strike Group) that could include the full spectrum of the force—various ships, submarines, aircraft, and Marine Corps and other military service's forces—to train in the complex command, control, operational coordination, and logistics functions designed to prepare the force for deployment. A Strike Group may be composed of up to four to six destroyers and a cruiser, 75 aircraft, and an aircraft carrier, with 7,500 Sailors and Marines participating. They also provide partner building with other maritime nations allowing U.S. military to learn to work with foreign partners across a range of military operations, building interoperability. Therefore, during these types of training events, the Action Proponents require vast areas of sea and air space which cannot be segmented without reducing the effectiveness of the training or decreasing the safety of personnel. The Action Proponents requires access to a variety of realistic tactical oceanographic and environmental conditions (e.g., varied bathymetry and open sea space) to maximize training effectiveness, meet testing program requirements, and to train to cover and defend large areas of ocean comparable to how the military operates during a conflict. With the few number of ships deployed at any given time, the Navy must be able to control the sea and airspace over thousands of square miles relying on sensors and networks.

Military readiness activities must also mimic real world conditions to ensure safety of personnel, skill proficiency, and validation of testing program requirements. Areas for military readiness activities are chosen to allow for the realistic representation of the myriad training and testing scenarios that military units are required to complete to be mission effective. Areas have been chosen and designated based on proximity to associated training ranges (e.g., Southern California Range Complex proximate to San Diego area Navy and Marine Corps bases), available airspace (e.g., avoiding airspace conflicts), unobstructed sea space, or due to safety concerns. For example, military aircraft emergency (divert) landing fields are located to allow for short transits to these fields and hopefully, allow for safe landings

in the event of an emergency. These fields also are located away from populated areas in order to prevent mishaps that could put civilians in harm's way. Training areas are often also chosen to avoid areas popular for recreational boating and fishing.

Certain activities, such as deployment certification exercises using integrated warfare components, require large areas of the littorals and open ocean for realistic and safe training. The OPAREA within the Study Area represent critical sea space necessary to prepare naval forces for combat. Training and testing in these areas is vital to ensuring that Action Proponent units will be able to operate and defend the U.S. mainland from adversaries.

Expanding mitigation areas to encompass the Action Proponent's existing and proposed training and testing areas would require moving activities farther out to sea, which would reduce training and testing opportunities by taking time away from the intended activity to transit to a more distant area. This would also result in training or testing being conducted further offshore in bathymetric and oceanographic conditions that may not accurately reflect the types of environments where real world activities would occur. For example, conducting shallow water anti-submarine warfare training in deep water with simulating fathometer readings would promote bad habit patterns of ignoring critical depths, and in a real-world situation, those readings could be ignored as well, thereby jeopardizing safety and survival of the ship and crew.

Training in shallow water is necessary to develop proper crew coordination and exercise the tactics, techniques and procedures that ensure mission success. Realistic training is essential for crews to experience the effect of bottom topography (upslope vs. downslope) on sonar transmission/returns in general and when detecting targets in constrained environments that simulate environments where the Navy may operate, such as the East and South China Seas or the Strait of Hormuz. For example, transit training in the Alenuihaha Channel replicates those types of strait environments that may be contested by adversaries, and the Navy must learn to operate in them before facing hostile forces. Naval ships must train to counter submarine threats before deployment to ensure the first time a regularly rotating crew conducts anti-submarine warfare training in a strait is prior to being deployed to the Strait of Hormuz or similar areas. There are few geographic areas that enable forces to do this type of training outside of the HCTT Study Area. Newer-generation submarines, operated by more than 40 nations worldwide, continue to be a threat to global commerce, national security, and the safety of U.S. and our allied military personnel. As a result, defense against enemy submarines is a top priority for the Navy. While simulators provide early skill repetition and enhance teamwork, there is no substitute for live training in a realistic environment.

Increasing transit times would also result in additional fuel consumption, increase the Action Proponents' carbon footprint, and increase other expenditures due to wear and tear on equipment and personnel which serve as limiting factors for Action Proponent units, and could decrease valuable on-station training time. Additionally, unit-level training is constrained by the Optimized Fleet Response Plan timeline milestones and increasing time anywhere in the cycle exacerbates the challenges of meeting an already compact schedule. It is also likely that such a strategy would merely shift effects from one area or species/stock to another.

In summary, further restrictions on the level, number, or timing (seasonal or time of day) of military readiness activities could significantly impact a unit's ability to meet their individual training and certification requirements, the Navy's ability to certify strike groups for deployment in support of national security tasking, the Navy's ability to meet testing program requirements and required

acquisition milestones, and operational costs due to increased fuel, maintenance, and time required to complete activities. Constraints on military readiness activities have the potential to increase safety risks when moving activity locations further offshore and accelerating the fatigue-life of aircraft and other equipment, and can reduce training and testing realism by limiting access to necessary environmental or oceanographic conditions for proper testing and training in tactics, techniques and procedures.

The Action Proponents' responsibility to the American people dictates an efficient use of fiscal resources and an approach that adapts to the evolving security environment, with the ability to make adjustments according to global events. The Action Proponents must be able to successfully operate across the range of military operations, from humanitarian assistance or disaster relief to deterring war or defeating an adversary. The military readiness activities under the Proposed Action balances the Action Proponents' need to train and test effectively with their commitment to environmental stewardship.

Based on the extensive review and analysis that is presented in Sections K.3 (Biologically Important Areas Within the Hawaii Study Area) and K.4 (Biologically Important Areas Within the California Study Area) of this appendix, the Action Proponents propose to continue implementing certain existing mitigation areas described in Table K-10 and shown in Figure K-26 and Figure K-27. The existing Humpback Whale Special Reporting Area in the Hawaii Study Area is proposed to be expanded, and two of the existing mitigation areas in the California Study Areas have new names: the Southern California Blue Whale Mitigation Area was previously referred to as the San Diego Arc Mitigation Area, and is proposed to be reduced; and the California Large Whale Awareness Message Mitigation Area which was previously referred to as the Blue Whale (June–October]), Gray Whale (November–March), and Fin Whale (November–May) Awareness Notification Message Areas. The action proponents will also continue to implement geographic mitigation areas for seafloor resources (Table K-11) as discussed in Chapter 5.

Table K-10: Proposed Existing Mitigation Areas for Marine Mammals in the Hawaii and California Study Areas

Category	Mitigation Requirements	Mitigation Benefits
Hawaii Island Marine Mammal Mitigation Area		
Acoustic	• The Action Proponents will not use more than 300 combined hours of MF1 and MF1C surface ship hull-mounted mid-frequency active sonar or 20 hours of helicopter dipping sonar (a mid-frequency active sonar source) annually within the mitigation area.	• Mitigation is designed to reduce exposure of numerous small and resident marine mammal populations (including Blainville's beaked whales, bottlenose dolphins, Cuvier's beaked whales, dwarf sperm whales, false killer whales, melon-headed whales, pantropical spotted dolphins, pygmy killer whales, rough-toothed dolphins, short-finned pilot whales, and spinner dolphins), humpback whales within important seasonal reproductive habitat, and Hawaiian monk seals within critical habitat, to levels of sound that have the potential to cause injurious or behavioral impacts.
Explosives	• The Action Proponents will not detonate in-water explosives (including underwater explosives and explosives deployed against surface targets) within the mitigation area.	• Mitigation is designed to prevent exposure of the species discussed above to explosives that have the potential to cause injury, mortality, or behavioral disturbance.
Hawaii 4-Islands Marine Mammal Mitigation Area		
Acoustic	• From November 15 – April 15, the Action Proponents will not use MF1 or MF1C surface ship hull-mounted mid-frequency active sonar within the mitigation area.	• Mitigation is designed to minimize exposure of humpback whales in high-density seasonal reproductive habitats (e.g., north of Maui and Molokai) and Main Hawaiian Islands insular false killer whales in high seasonal occurrence areas to levels of sound that have the potential to cause injurious or behavioral impacts.

Category	Mitigation Requirements	Mitigation Benefits
Explosives	• The Action Proponents will not detonate in-water explosives (including underwater explosives and explosives deployed against surface targets) within the mitigation area (year-round).	• Mitigation is designed to prevent exposure of humpback whales in high-density seasonal reproductive habitats (e.g., north of Maui and Molokai), Main Hawaiian Islands insular false killer whales in high seasonal occurrence areas, and numerous small and resident marine mammal populations that occur year-round (including bottlenose dolphins, pantropical spotted dolphins, and spinner dolphins, and Hawaiian monk seals) to explosives that have the potential to cause injury, mortality, or behavioral disturbance.
Hawaii Humpback Whale Special Reporting Mitigation Area		
Acoustic	• The Action Proponents will report the total hours of MF1 and MF1C surface ship hull-mounted mid-frequency active sonar used from November through May in the mitigation area in their training and testing activity reports submitted to NMFS.	• Special reporting requirements are designed to aid NMFS' and the Action Proponents' analysis of potential impacts in the mitigation area, which contains the Humpback Whale National Marine Sanctuary plus a 5-kilometer sanctuary buffer (excluding the Pacific Missile Range Facility).
Hawaii Humpback Whale Awareness Notification Mitigation Area		
Acoustic, Explosives, Physical disturbance and strike	• The Action Proponents will broadcast awareness notification messages to alert applicable assets (and their Lookouts) transiting and training or testing in the Hawaii Range Complex to the possible presence of concentrations of humpback whales from November through May. • Lookouts will use that knowledge to help inform their visual observations during military readiness activities that involve vessel movements, active sonar, in-water explosives (including underwater explosives and explosives deployed against surface targets), or the deployment of non-explosive ordnance against surface targets in the mitigation area.	• Mitigation is designed to minimize potential humpback whale vessel interactions and exposure to acoustic, explosive, and physical disturbance and strike stressors that have the potential to cause mortality, injury, or behavioral disturbance during the reproductive season. • The Hawaii Humpback Whale Awareness Notification Mitigation Area applies to the entire Hawaii Range Complex.
Southern California Blue Whale Mitigation Area		
Acoustic	• From June 1 to October 31, the Action Proponents will not use more than 300 combined hours of MF1 and MF1C surface ship hull-mounted mid-frequency active sonar (excluding normal maintenance and systems checks) total during training and testing within the combination of this mitigation area, the Northern California Large Whale Mitigation Area, and the Central California Large Whale Mitigation Area.	• Mitigation to limit use of MF1 and MF1C active sonar is designed to reduce exposure of blue whales within important seasonal foraging habitats to levels of sound that have the potential to cause injurious or behavioral impacts.
Explosives	• From June 1 to October 31, the Action Proponents will not detonate in-water explosives (including underwater explosives and explosives deployed against surface targets) during large-caliber gunnery, torpedo, bombing, and missile (including 2.75" rockets) training and testing.	• Mitigation to limit the use of in-water explosives is designed to reduce exposure of blue whales within important seasonal foraging habitats to explosives that have the potential to cause injury, mortality, or behavioral disturbance.
California Large Whale Awareness Message Mitigation Area		

Category	Mitigation Requirements	Mitigation Benefits
Acoustic, Explosives, Physical disturbance and strike	• The Action Proponents will broadcast awareness notification messages to alert applicable assets (and their Lookouts) transiting and training or testing off the U.S. West Coast to the possible presence of concentrations of large whales, including gray whales (November–March), fin whales (November–May), and mixed concentrations of blue, humpback, and fin whales that may occur based on predicted oceanographic conditions for a given year (e.g., May–November, April–November). Notification messages may provide the following types of information which could vary annually: ○ While blue whales tend to be more transitory, some fin whales are year-round residents that can be expected in nearshore waters within 10 NM of the California mainland and offshore operating areas at any time. ○ Fin whales occur in groups of one to three individuals, 90 percent of the time, and in groups of four or more individuals, 10 percent of the time. ○ Unique to fin whales offshore Southern California (including the Santa Barbara Channel and PMSR area), there could be multiple individuals and/or separate groups scattered within a relatively small area (1–2 NM) due to foraging or social interactions. ○ When a large whale is observed, this may be an indicator that additional marine mammals are present and nearby, and the vessel should take this into consideration when transiting. ○ Lookouts will use that knowledge to help inform their visual observations during military readiness activities that involve vessel movements, active sonar, in-water explosives (including underwater explosives and explosives deployed against surface targets), or the deployment of non-explosive ordnance against surface targets in the mitigation area.	• Mitigation to broadcast awareness notification messages to applicable assets, and to use that information to inform visual observations, is designed to minimize potential blue whale, gray whale, and fin whale vessel interactions and exposure to acoustic stressors, explosives, and physical disturbance and strike stressors that have the potential to cause mortality, injury, or behavioral disturbance during the foraging and migration seasons, and to resident whales.
California Large Whale Real-Time Notification Mitigation Area		
Physical disturbance and strike	• The Action Proponents will issue real-time notifications to alert Action Proponent vessels operating in the vicinity of large whale aggregations (four or more whales) sighted within 1 NM of an Action Proponent vessel within an area of the Southern California Range Complex (between 32–33 degrees North and 117.2–119.5 degrees West).	• The real-time notification area encompasses the locations of recent (2009, 2021, 2023) vessel strikes, and historic strikes where precise latitude and longitude were known.

Category	Mitigation Requirements	Mitigation Benefits
	○ The four whales that make up a defined "aggregation" would not all need to be from the same species, and the aggregation could consist either of a single group of four (or more) whales, or any combination of smaller groups totaling four (e.g., two groups of two whales each or a group of three whales and a solitary whale) within the 1 NM zone. Lookouts will use the information from the real-time notifications to inform their visual observations of applicable mitigation zones. If Lookouts observe a large whale aggregation within 1 NM of the event vicinity within the area between 32–33 degrees North and 117.2–119.5 degrees West, the watch station will initiate communication with the designated point of contact to contribute to the Navy's real-time sighting notification system.	
San Nicolas Island Pinniped Haulout Mitigation Area		
In-air vehicle launch noise	▪ Navy personnel shall not enter pinniped haulout or rookery areas. Personnel may be adjacent to pinniped haulouts and rookery prior to and following a launch for monitoring purposes. ▪ Missiles shall not cross over pinniped haulout areas at altitudes less than 305 m (1,000 ft.). ▪ The Navy may not conduct more than 10 launch events at night annually. ▪ Launch events shall be scheduled to avoid the peak pinniped pupping seasons from January through July, to the maximum extent practicable. The Navy shall implement a monitoring plan for beaches exposed to missile launch noise which that must obtain visual, video, and acoustic data during each launch event, to the maximum extent practicable.	• Mitigation is designed to minimize in-air launch noise and physical disturbance to pinnipeds hauled out on beaches, as well as to continue assessing baseline pinniped distribution/abundance and potential changes in pinniped use of these beaches after launch events.

Table K-11: Proposed Existing Mitigation Areas for Seafloor Resources in the Hawaii and California Study Areas

Category	Mitigation Requirements	Mitigation Benefits
Shallow-Water Coral Reef and Precious Coral Bed Mitigation Area		
Explosives	• The Action Proponents will not detonate any in-water explosives (including underwater explosives and explosives deployed against surface targets) within a horizontal distance of 350 yd. from shallow-water coral reefs and precious coral beds (except in designated areas of the Hawaii Range Complex, such as Barbers Point Underwater Range, Ewa Training Minefield, and Puuloa Underwater Range where these features	• The 350 yd. mitigation area radius for in-water explosives was conservatively designed to be several times larger than the impact footprint (e.g., crater and expelled material radius) of the largest bottom-laid explosive used in the Study Area. As described in Appendix I, that explosive is a 650-lb. NEW mine with an estimated impact footprint radius of 22.7 yd. The 350 yd. mitigation area radius is 11 times larger than the maximum estimated explosive impact footprint radius, and is even more conservatively sized when compared to the impact footprints of smaller explosives. Therefore, the mitigation will prevent direct impacts (and some level of indirect impacts) from explosives on shallow-water coral reefs and precious coral beds in the Study Area.

Category	Mitigation Requirements	Mitigation Benefits
	will be avoided to the maximum extent practical).	
Physical disturbance and strike	• The Action Proponents will not set vessel anchors within the anchor swing circle radius from shallow-water coral reefs and precious coral beds (except in designated anchorages). • The Action Proponents will not place non-explosive seafloor devices or deploy non-explosive ordnance against surface targets (including aerial-deployed mine shapes) within a horizontal distance of 350 yd. from shallow-water coral reefs and precious coral beds (except in designated areas in the Hawaii Range Complex, such as Barbers Point Underwater Range, Ewa Training Minefield, and Puuloa Underwater Range where these features will be avoided to the maximum extent practical).	• The anchor swing circle mitigation will ensure that vessel anchors do not come into contact with shallow-water coral reefs and precious coral beds when factoring in environmental conditions that could affect anchoring position, such as winds, currents, and water depth. • For ease of implementation, the 350 yd. mitigation area radius for explosives was also adopted for seafloor devices and non-explosive ordnance deployed against surface targets. This mitigation area radius is even more conservative when compared to the small impact footprints of these non-explosive stressors. Therefore, the mitigation will prevent direct impacts (and some level of indirect impacts) from seafloor devices and non-explosive ordnance deployed against surface targets on shallow-water coral reefs and precious coral beds.
Artificial Reef, Hard Bottom Substrate, and Shipwreck Mitigation Area		
Explosives	• The Action Proponents will not detonate explosives on or near the seafloor (e.g., explosive bottom-laid or moored mines) within a horizontal distance of 350 yd. from artificial reefs, hard bottom substrate, and shipwrecks (except in designated areas in the Hawaii California OPAREAs, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practical).	• The 350 yd. mitigation area radius will prevent direct impacts (and some level of indirect impacts) from explosives on artificial reefs, hard bottom substrate, and shipwrecks for the reasons described in Section 5.7.1.
Physical disturbance and strike	• The Action Proponents will not set vessel anchors within the anchor swing circle radius from artificial reefs, hard bottom substrate, and shipwrecks (except in designated anchorages). • The Action Proponents will not place non-explosive seafloor devices (that are not precisely placed) within a horizontal distance of 350 yd. from artificial reefs, hard bottom substrate, and shipwrecks (except as described in the bullet above for vessel anchors, the bullet below for precisely placed seafloor devices, and in designated areas of the Hawaii and California OPAREAs, such as the nearshore areas of San Clemente Island and in the Silver Strand Training Complex, where these features will be avoided to the maximum extent practical). • The Action Proponents will not position precisely placed non-explosive seafloor devices directly on artificial reefs, hard bottom substrate, or shipwrecks.	• Mitigation ensures that vessel anchors do not come into contact with artificial reefs, hard bottom substrate, and shipwrecks, when factoring in environmental conditions that could affect anchoring position, such as winds, currents, and water depth. • For ease of implementation, the 350 yd. mitigation area radius for explosives was also adopted for seafloor devices (that are not precisely placed), and is even more conservative when compared to the small impact footprints of non-explosive seafloor devices. • Mitigation specific to precisely placed seafloor devices was first developed and coordinated with NMFS for live hard bottom habitats during the 2022 HSTT Study Area's Essential Fish Habitat consultation reinitiation (U.S. Department of the Navy, 2022). That mitigation is being included in this document, and applied to the whole mitigation area category of hard bottom substrate as well as artificial reefs and shipwrecks, for consistency and practicality of implementation. Because precisely placed seafloor devices are deployed with a high degree of placement accuracy, the original intent of the mitigation (i.e., preventing direct physical strike and disturbance) will continue to be achieved. Therefore, the mitigation for seafloor devices that are either precisely placed or not precisely placed will collectively prevent direct impacts (and some level of indirect impacts) from seafloor devices on artificial reefs, hard bottom substrate, and shipwrecks.

Category	Mitigation Requirements	Mitigation Benefits
	• The Action Proponents will avoid positioning precisely placed non-explosive seafloor devices near these resources by the largest distance that is practical to implement based on mission requirements.	

In addition, the Action Proponents propose to introduce two new mitigation areas in the California Study Area: The Northern and Central California Large Whale Mitigation Areas (Table K-12 and Figure K-27). These new proposed mitigation areas are described in Section K.6.1.1.1 (Northern and Central California Large Whale Mitigation Areas). No new mitigation areas were proposed in the Hawaii Study Area, because the current areas continue to meet the biological effectiveness criteria and remain operationally practical to implement. The new proposed mitigation areas were developed because they met the biological effectiveness criteria when balanced against the operational practicality criteria noted above in Sections K.2.1.2 (Biological Effectiveness Assessment) and K.2.1.3 (Operational Assessment). As the existing and newly proposed mitigation areas will limit or prohibit a combination of acoustic and explosive sources, seasonally or year-round, all marine mammals and protected species present in the mitigation areas would benefit.

Table K-12: Proposed New Mitigation Areas for Marine Mammals in the California Study Areas

Category	Mitigation Requirements	Mitigation Benefits
Northern California Large Whale Mitigation Area		
Acoustic	• From June 1 to October 31, the Action Proponents will not use more than 300 combined hours of MF1 and MF1C surface ship hull-mounted mid-frequency active sonar (excluding normal maintenance and systems checks) total during training and testing within the combination of this mitigation area, the Central California Large Whale Mitigation Area, and the Southern California Blue Whale Mitigation Area.	• Mitigation to limit use of MF1 and MF1C active sonar is designed to reduce exposure of blue whales, fin whales, gray whales, and humpback whales in important seasonal foraging, migratory, and calving habitats to levels of sound that have the potential to cause injurious or behavioral impacts.
Central California Large Whale Mitigation Area		
Acoustic	• From June 1 to October 31, the Action Proponents will not use more than 300 combined hours of MF1 and MF1C surface ship hull-mounted mid-frequency active sonar (excluding normal maintenance and systems checks) total during training and testing within the combination of this mitigation area, the Northern California Large Whale Mitigation Area, and the Southern California Blue Whale Mitigation Area.	• Mitigation to limit use of MF1 and MF1C active sonar is designed to reduce exposure of blue whales, fin whales, gray whales, and humpback whales in important seasonal foraging, migratory, and calving habitats to levels of sound that have the potential to cause injurious or behavioral impacts.

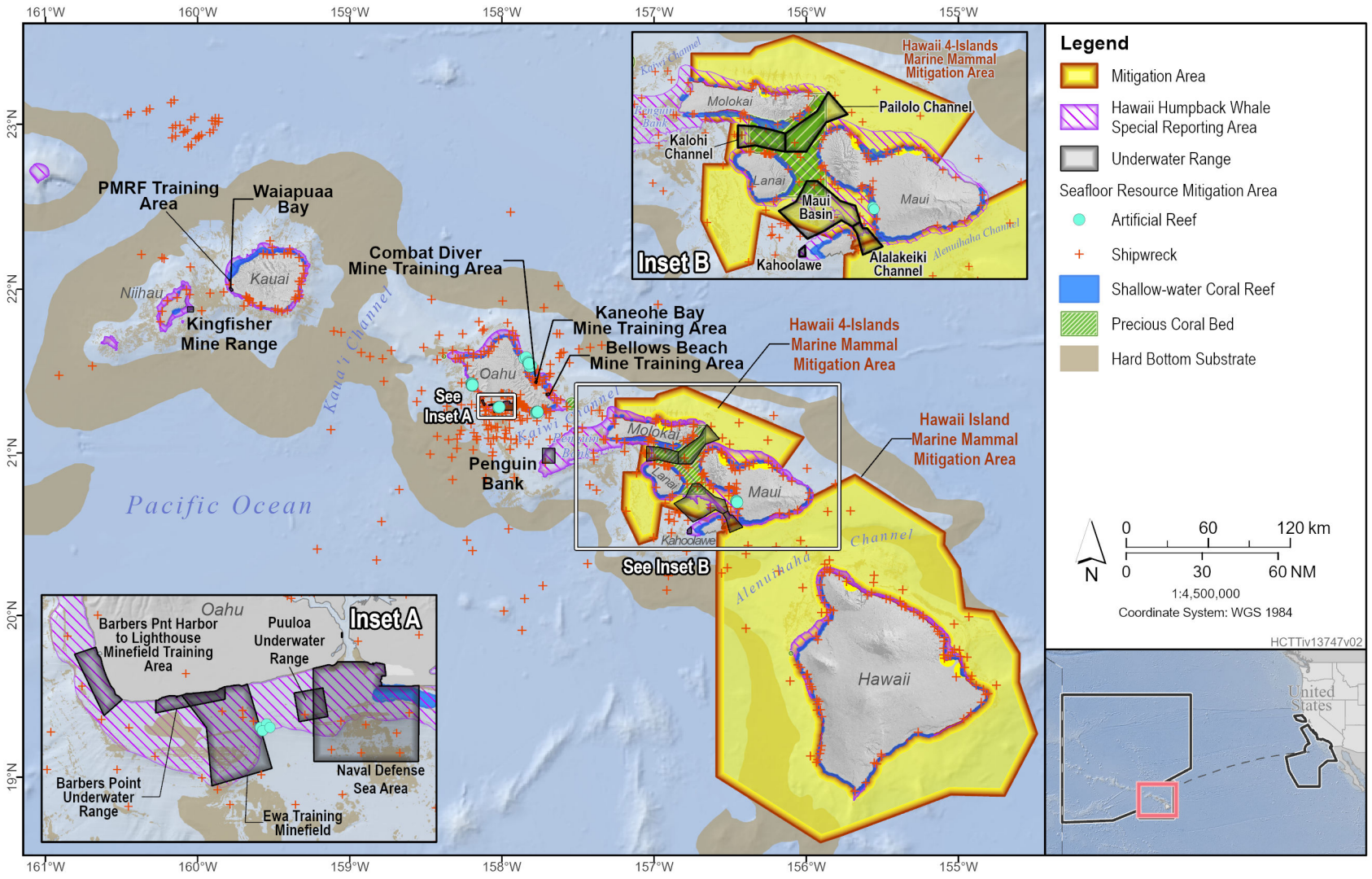


Figure Updated 10/27/2025

Figure K-26: Proposed Mitigation Areas in the Hawaii Study Area

K.6.1 Proposed New Mitigation Measures within the Mitigation Areas

The Action Proponents will limit the use of the more impactful acoustic sources (surface ship hull-mounted mid-frequency active sonar, dipping sonar, or certain types of explosives during specific activities where applicable) within proposed mitigation areas temporally or year-round when conducting military readiness activities under the Proposed Action. Annual limits for these sources within specific areas were informed by classified operational and historical reporting data. All other active sonar used by the Action Proponents is allowed within the mitigation areas. Additionally, the broadcasting of notification messages to alert applicable assets (and their lookouts) in certain proposed existing mitigation areas would help mitigate potential adverse effects from physical disturbance and strike due to vessel movements.

K.6.1.1 Northern and Central California Large Whale Mitigation Areas

The proposed Northern and Central California Large Whale Mitigation Areas are shown in Figure K-27. The Northern California Large Whale Mitigation Area is within the NOCAL Range Complex, generally extending from Point Arena south to an area west of the Farallon Islands. The Central California Large Whale Mitigation Area is within the PMSR and generally extends from Monterey Bay south to San Miguel Island. Within the proposed mitigation areas, the Navy would not use more than 300 combined hours of MF1 and MF1C surface ship hull-mounted mid-frequency active sonar (excluding normal maintenance and systems checks) total during training and testing.

This proposed mitigation would be active seasonally, from June 1 through October 31, and overlaps the revised BIAs of four large whale species in the California Study Area: the Blue whale, Gray Whale, Fin Whale, and Humpback whale. The revised BIAs for Blue whales, Fin whales, and Humpback whales are all feeding areas, and the proposed mitigation areas are expected to reduce the potential for adverse effects resulting from military readiness activities using sonar on these species' feeding behavior when in the areas. For Gray whales, the revised BIA in the California Study Area is a migratory and reproductive area, and the proposed mitigation areas are expected to reduce the potential for adverse effects resulting from military readiness activities using sonar on Gray whale migratory and reproductive behavior when in the areas.

The proposed Northern and Central California Large Whale Mitigation Areas overlap Southern Resident killer whale critical habitat, providing a benefit Southern Resident killer whale to the species by reducing the potential for adverse effects from military readiness activities using sonar. They also overlap four NMSs (Chumash Heritage NMS, Cordell Bank NMS, Greater Farallones NMS, and Monterey Bay NMS), providing the same benefit to species and individuals within the portions of the mitigation areas that overlap the sanctuaries.

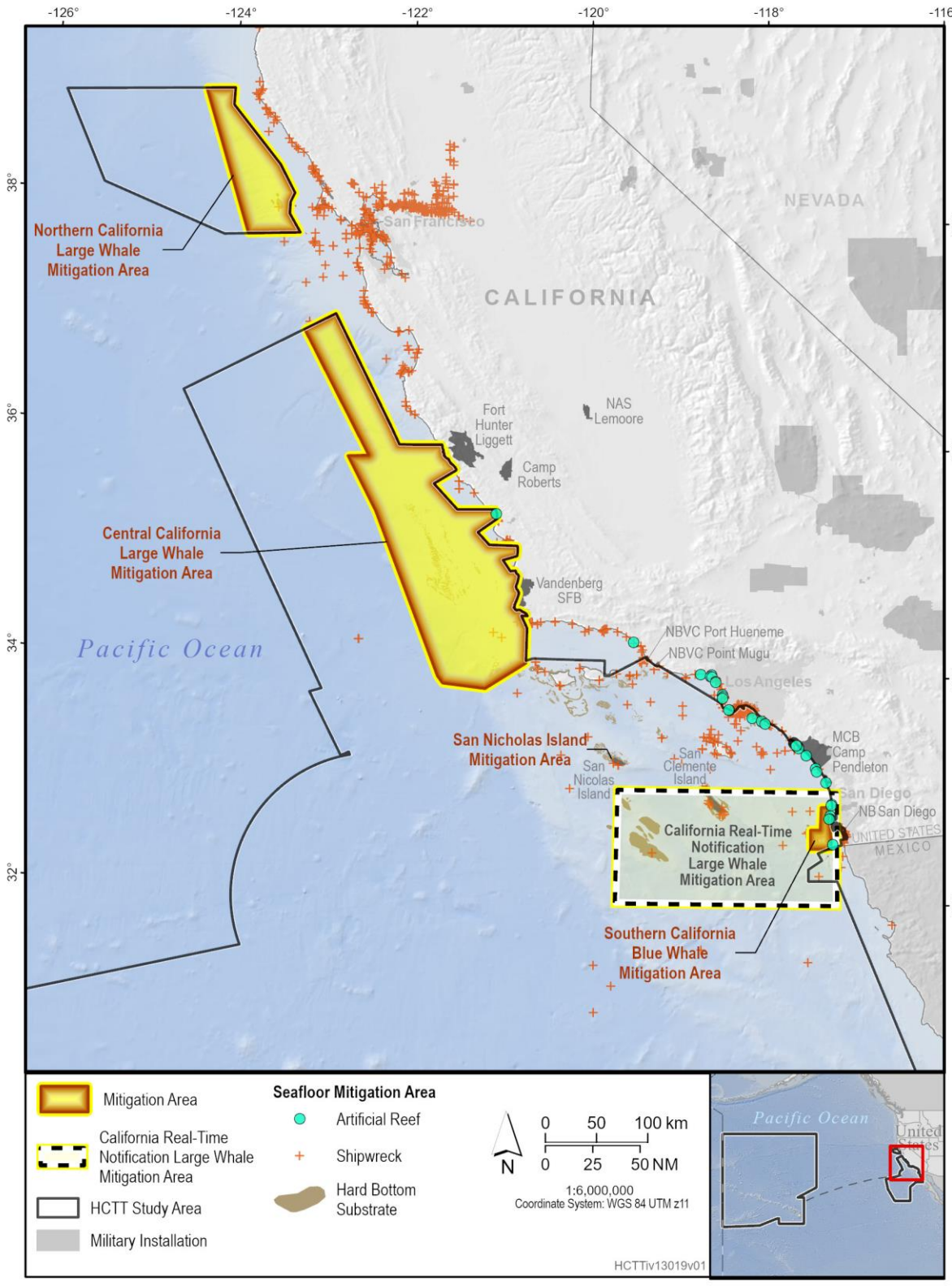


Figure K-27: Proposed Mitigation Areas in the California Study Area

K.6.1.2 Mitigation Areas Considered and Not Carried Forward

When assessing the revised BIAs in Sections K.3 (Biologically Important Areas Within the Hawaii Study Area) and K.4 (Biologically Important Areas Within the California Study Area), it was decided that the parent BIAs were too large and encompassed too much of the Hawaii and California Study Areas (Note: *Discrete maps of the individual areas are presented in the following subsections where those areas are discussed for each species*

Figure K-1 and Figure K-2) to be practical to implement per the mitigation considerations discussed at the beginning of this section. NMFS also indicated that the parent BIAs provided less value to the species because of the size of the areas, when compared with the child or core BIAs. In addition, because of the revisions made to the BIAs (e.g., blue whale core BIA geography shift) since the 2018 HSTT EIS/OEIS, the following existing mitigation areas in the California Study Area were considered and not carried forward: Santa Monica/Long Beach Mitigation Areas and the Santa Barbara Island Mitigation Area. In addition, due to the inclusion of PMSR, and other reasons mentioned in Section K.5.2.1 (San Nicolas Island Mitigation Area) of this Appendix, the San Nicolas Island Mitigation Area from the 2018 HSTT EIS/OEIS was considered and not carried forward because continuing mitigation in that area would be impractical since it would require the modification of military readiness activities in a way that would prevent them from meeting mission objectives and present implications for continuing to meet statutory mandates.

K.6.1.3 Mitigation Summary

In summary, the Action Proponents have thoughtfully and thoroughly assessed each revised BIA. However, incorporating each BIA as a mitigation area in their totality would prohibit military readiness activities using sonar and explosives in much of the primary training and testing areas within the HCTT Study Area, leaving fragmented areas and timeframes that are not compatible with effective, realistic training and testing. The Action Proponents would be unable to effectively prepare their forces for operational employment without access to the ranges and locations that have been carefully developed over decades. These areas allow for military readiness activities to be conducted in a manner compatible with multiple other activities in the marine environment, such as energy exploration, alternative energy development, commercial fishing, recreational activities, and commercial shipping. As noted in Chapter 2 (Description of Proposed Action and Alternatives), the Action Proponents also require extensive sea space so that individual military readiness activities can occur at sufficiently safe distances such that these activities do not interfere with one another and so that military units can train to communicate and operate in a coordinated fashion over tens or hundreds of square miles, as they will have to do when in an operational theater.

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