Joint Flight Campaign Second Supplemental Environmental Assessment / Overseas Environmental Assessment

Draft

March 2026

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JOINT FLIGHT CAMPAIGN
SECOND SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT / OVERSEAS ENVIRONMENTAL ASSESSMENT

Lead Agencies: United States Department of the Navy and United States Army

Action Proponents: United States Department of the Navy, Strategic Systems Programs and United States Army Portfolio Acquisition Executive Fires

Title of Proposed Action: Joint Flight Campaign Flight Tests

Project Location: Atlantic and Pacific Ocean regions

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Abstract

The United States Department of the Navy and United States Army have prepared this Supplemental Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) to evaluate the potential environmental impacts of the Proposed Action to meet requirements of the U.S. National Environmental Policy Act (NEPA). The Joint Flight Campaign (JFC) program consists of up to six flight tests annually over a 10-year period, beginning in 2022 and ending in 2032. The Proposed Action consists of additions to the JFC program to include alternatives for launch of the AUR missile from the Navy and Army weapon system platforms and associated launch and flight test operations from new alternative launch sites at San Nicolas Island, Wake Island, and Meck Islet; flight test activities within expanded areas of the Pacific Broad Ocean Area (BOA); and use of floating target rafts in the Atlantic and Pacific BOAs.

The Draft Supplemental EA/OEA evaluates the potential impacts to the human and natural environment from implementing the proposed changes to the JFC Program. The No Action Alternative is also evaluated as a requirement of NEPA to serve as a baseline from which to analyze the effects of not implementing changes to the test program. Supported by the information and environmental analysis presented in this document, the Navy and Army will decide whether to implement the proposed changes to the JFC flight test program under one or more new alternatives or to select the No Action Alternative. The Draft Supplemental EA/OEA evaluates several environmental/resource categories within the affected environment that potentially could be impacted to provide Navy decision makers with sufficient information to plan and make informed decisions on the proposed changes to the JFC Program. After consideration of all alternatives, the Navy and Army have selected two new alternative launch site locations (Wake Island and Meck Islet) and new BOA alternative activities as part of the Preferred Alternative for implementation of the Proposed Action. Implementation of the Proposed Action would not significantly impact the quality of the human and natural environment and would not significantly harm the environment of the global commons (high seas).

EXECUTIVE SUMMARY

ES.1 Introduction

The United States Department of the Navy (Navy) and the United States Army (Army) have prepared this Supplemental Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) to analyze potential environmental impacts from conducting proposed Joint Flight Campaign (JFC) flight test activities. This Supplemental EA/OEA provides supplemental analysis for JFC flight test activities not included in the JFC EA/OEA completed in 2022 or the JFC Supplemental EA/OEA completed in 2024. This Supplemental EA/OEA evaluates the potential impacts from implementing the proposed JFC flight test action changes (i.e., the Proposed Action). The JFC flight test activities and activity areas that remain unchanged from the 2022 JFC EA/OEA and the 2024 JFC Supplemental EA/OEA are not addressed in this Supplemental EA/OEA but are incorporated into this document by reference.

Supported by the information and environmental analysis presented in this document, the Navy and Army will decide whether to implement the proposed changes to the JFC flight test program under the Preferred Alternative, all alternatives, or to select the No Action Alternative.

ES.2 Purpose and Need

The purpose of the JFC flight test program is to perform the land-based tests needed to prove that the Navy Conventional Prompt Strike (CPS) weapon system and Army Long Range Hypersonic Weapon (LRHW) system meet all key performance requirements within the capabilities of the All Up Round (AUR) missile used by both systems. The Proposed Action is needed to further refine and demonstrate CPS and LRHW capabilities required to improve the United States' capability to respond to time-sensitive threats, thereby maintaining technical superiority against its adversaries. The successful development and fielding of the CPS and LRHW weapon systems has been identified as a National priority by the Department of Defense.

ES.3 Description of the Proposed Action and Alternatives

The JFC program consists of up to six flight tests annually over a 10-year period, beginning in 2022 and ending in 2032. A typical JFC flight test involves pre-flight test preparation activities, launch of a flight test vehicle from a land-based launch site, flight of the test vehicle and payload (the AUR) over the ocean, payload impact at a terminal ocean target site, and post-flight test cleanup and demobilization activities.

The proposed additions to the JFC program consist of launch of the AUR missile from the Navy and Army weapon system platforms and associated launch and flight test operations from new alternative launch sites at San Nicolas Island (SNI), Wake Island, and Meck Islet; flight test activities within expanded areas of the Pacific Broad Ocean Area (BOA); and use of floating target rafts in the Atlantic and Pacific BOAs. The proposed additions to the JFC flight test program would not modify the number of annual flight tests or the timeframe for flight tests (between 2022 to 2032).

After consideration of all alternatives, the Navy and Army have selected two new alternative launch locations (Wake Island and Meck Islet) and new BOA alternative activities as part of the Preferred Alternative for implementation of the Proposed Action. All past selected alternatives evaluated in previous EA/OEAs would remain a part of the JFC flight test program but are not reevaluated in this Supplemental EA/OEA as they are a part of the No Action Alternative.

Under the No Action Alternative, the JFC flight test program would continue as described in the 2022 JFC EA/OEA and the 2024 JFC Supplemental EA/OEA. All locations and activities included in previously signed Findings of No Significant Impact for the JFC flight test program would continue to be utilized. The No Action Alternative may no longer have sufficient flight test options or capacity to meet JFC program purpose and needs.

ES.4 Summary of Environmental Consequences

This Supplemental EA/OEA evaluates the potential impacts to the human and natural environment from implementing the JFC flight test program under the Proposed Action. The No Action Alternative was also evaluated as a requirement of the National Environmental Policy Act (NEPA) to serve as a baseline from which to analyze the effects of not implementing the test program.

Under the No Action Alternative, all environmental consequences would be the same as described and evaluated in the 2022 and 2024 NEPA documents and there would be no impacts to baseline resource conditions at the new alternative locations.

Table ES-1 provides a tabular summary of the potential impacts to environmental resource topics associated with implementation of the Proposed Action as well as cumulative impacts of the Proposed Action in combination with other past, present, and reasonably foreseeable future actions. Overall, implementation of the Proposed Action would not significantly impact the quality of the human and natural environment and would not significantly harm the environment of the global commons (high seas).

ES.5 Standard Operating Procedures

The Navy and Army would implement standard operating procedures as specified in **Appendix C** of the JFC Supplemental EA/OEA in order to avoid or reduce potential impacts on the identified environmental resources areas.

ES.6 Other Considerations

The principal federal, regional, state, and local laws and regulations that are applicable to the Proposed Action as well as compliance status for the Proposed Action with these are detailed in **Table 8** of the Supplemental EA/EOA.

The Navy and Army plan to notify, coordinate, and consult with all relevant regulatory agencies on implementation of the Proposed Action under the Preferred Alternative as necessary to identify and resolve potential environmental issues and regulatory requirements. The Navy and Army plan to conduct coordination with federal, state, and local regulatory agencies regarding implementation of the Preferred Alternative. If the SNI launch site were selected for implementation of the Proposed Action in the future, additional coordination would be required.

ES.7 Public Involvement

The Draft Supplemental EA/OEA has been made available for a 30-day public comment period via the Internet at https://www.nepa.navy.mil/JFCSecondSupplementalEA. The Notice of Availability for the Draft Supplemental EA/OEA was published in newspapers in the United States and the Republic of the Marshall Islands. Public and agency comments will be accepted on the website or by mail. All substantive submitted comments will be provided with responses in **Appendix A** of the Final Supplemental EA/OEA.

Table ES-1. Summary of Environmental Consequences and Cumulative Effects under the Proposed Action

Resource Topic	Preferred Alternative (Wake and Meck Island Launches with New BOA Activities)	All Alternative Sites and Activities (Preferred Alternative plus SNI Launches)	Cumulative Effects
Air Quality	Less than significant impacts: • Emissions would occur from delivery of components and equipment to the launch pad, minor facility upgrades, vehicle use during pre-and post-launch activities, deployment of support assets, flight test operations including the launch event, demobilization activities, and construction of new launch and equipment pads at alternative launch sites. • Minimal ground disturbance would occur and emissions from pad construction are expected to be negligible. • Estimated annual emissions from launch operations would not exceed significance indicator levels for any criteria pollutant at any alternative launch site. Therefore, impacts on air quality from the Proposed Action at launch sites would be minor. • In the BOA, there would be no significant impact on air quality from air emissions associated with JFC flight tests. Total emissions from Proposed Action vessel activity are anticipated to remain well below significance thresholds for criteria pollutants and impacts would be negligible.		• Emissions would have negligible to minor impacts on air quality that would contribute incrementally to cumulative effects but not in a measurable or detectable way. • The additive effects from combined emissions would be short-term negligible to moderate at launch sites with no long-term accumulation. • When taken together with global rocket emissions, minor additive contributions to cumulative effects would have negligible impacts on air quality in the BOA.
Biological Resources	Less than significant impacts: • There would be no to negligible impacts to terrestrial vegetation at launch sites. • Impacts on terrestrial wildlife would be minor and short term. No significant adverse effect on the sustainability of any migratory or UES-listed bird population is likely. Based on the distribution of hauled out or nesting sea turtles, there would be no to negligible impacts on ESA-listed sea turtles. For Meck Islet, the potential effects on nesting or hauled-out sea turtles were previously addressed in programmatic consultations for RTR mission flight test activities. • Under normal operations, no impacts to nearshore marine vegetation and wildlife are expected. • Since no test components, debris, or hazardous materials are expected to enter marine environments, there would be no impact on environmentally sensitive habitats such as Essential Fish Habitat or marine protected areas.	Less than significant impacts: • Impacts would generally be the same as under the Preferred Alternative except that with the addition of launch and support activities at SNI: ○ Potential disturbance of nesting western snowy plovers and hauled out pinnipeds due to launch noise and overflight would result in minor and short-term impacts consistent with ongoing operations at SNI but may necessitate future coordination or consultation under the ESA and the Marine Mammal Protection Act.	• The combined history of land use on SNI, Wake Island, and Meck Islet have had cumulative impacts on biological resources; however, current management of natural resources and implementation of protective measures at these sites mitigate the risk of future cumulative impacts from military training and testing there. • The incremental contribution of the Proposed Action to these cumulative effects on biological resources would be negligible.
Cultural Resources	Less than significant impacts: • No physical impacts on known cultural resources are anticipated. • Any visual effects are expected to be negligible and would be consistent with existing infrastructure and use of the launch sites.	Less than significant impacts: • Impacts would generally be the same as under the Preferred Alternative except that with the addition of proposed launch pad and utility construction activities at SNI: ○ There are no known recorded archaeological sites in the vicinity and no	• Military use and environmental conditions have had cumulative effects on cultural resources at all alternative launch sites. • Additional Proposed Action impacts would be negligible to minor as ground disturbance is limited and further changes

Resource Topic	Preferred Alternative (Wake and Meck Island Launches with New BOA Activities)	All Alternative Sites and Activities (Preferred Alternative plus SNI Launches)	Cumulative Effects
	• Standard operating procedures consistent with those developed for routine activities at launch site installations would be in place for any unexpected discoveries.	impacts are expected. The potential for unanticipated discoveries of cultural materials during construction exists and impacts could be significant without mitigation. ○ Future consultation may be required for compliance with Section 106 of the National Historic Preservation Act.	to the setting would be consistent with existing infrastructure. • Federal regulation and installation plans provide procedures for long-term protection and management of cultural resources at launch sites and it is unlikely that the Proposed Action would contribute to cumulative effects.
Geology and Soils	Less than significant impacts: • Impacts on geology and soils would be short-term minor. • Pad and utility construction activities would have minor impacts resulting from increase in soil erosion. • Standard spill prevention measures would be in place to minimize the potential for soil contamination. • As evidence by analyses conducted at other long-term launch sites, no adverse changes to soil chemistry are expected.		• Proposed Action effects on soils would be negligible with primary potential effects being from launch emissions. • The incremental contribution of the Proposed Action cumulative effects on soil quality would be unmeasurable and negligible.
Hazardous Materials and Waste Management	Less than significant impacts: • All hazardous materials and wastes would be properly managed and disposed of in accordance with regulations and standard launch installation plans, policies, and procedures. • Post flight test cleanup and other standard operating procedures would be in place and no human or environmental health risks are anticipated. • Any accidental spills from support equipment operations would be contained and cleaned up in accordance with launch installation response and management plans.		• The negligible hazardous materials and waste effects of the Proposed Action would result in negligible to minor contributions to cumulative environmental effects of past and ongoing military activities at launch installations and in the BOA.
Health and Safety	Less than significant impacts: • There would be no increase in risk to the public. • Extensive flight test and range safety planning would occur prior to each flight test. • Notice to Mariners and Notice to Airmen would be issued prior to flight tests to warn mariners and pilots. • Standard launch installation and department safety requirements would be followed to protect the health and safety of personnel.		• The negligible to minor short-term effects of the Proposed Action to health and safety would result in a negligible contribution to cumulative effects at launch installations and in the BOA.
Water Resources	Less than significant impacts: • Short-term minor impacts, if any, on water quality at launch sites would result primarily from potential pollution associated with combustion of rocket propellants during vehicle launch. • In the event that launch debris falls on land or enters nearshore waters, debris would be cleaned up to reduce the potential for residual materials and for impacts to water resources.		• Cumulative effects of ongoing military and non-military have primarily been in nearshore waters and from marine debris in the BOA. • Proposed Action would have unmeasurable and negligible incremental contributions to cumulative water quality effects.

Acronyms and Abbreviations: BOA = Broad Ocean Area, ESA = Endangered Species Act, JFC = Joint Flight Campaign, SNI = San Nicolas Island, UES = United States Army Kwajalein Atoll Environmental Standards

TABLE OF CONTENTS

Figures

Tables

Appendices

ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
AAQS	Ambient Air Quality Standards
AFI	Air Force Instruction
Air Force	United States Department of the Air Force
Army	United States Department of the Army
AUR	All Up Round
BELS	Box Erector Launch System
BOA	Broad Ocean Area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CCSFS	Cape Canaveral Space Force Station
CFR	Code of Federal Regulations
CPS	Conventional Prompt Strike
DAF	United States Department of the Air Force
DARPA	Defense Advanced Research Projects Agency
DEP	Document of Environmental Protection
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FR	Federal Register
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
HCTT	Hawaii California Training and Testing
ICRMP	Integrated Cultural Resources Management Plan
JFC	Joint Flight Campaign
KEEP	Kwajalein Environmental Emergency Plan
LRHW	Long Range Hypersonic Weapon
MBTA	Migratory Bird Treaty Act
MDA	Missile Defense Agency
MEC	Munitions and Explosives of Concern
MMPA	Marine Mammal Protection Act
NAAQS	National Ambient Air Quality Standards
Navy	United States Department of the Navy
NAWCWD	Naval Air Warfare Center Weapons Division
NBVC	Naval Base Ventura County
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
nm	Nautical Mile

Acronym / Abbreviation	Definition
NOTAM	Notice to Airmen
NRHP	National Register of Historic Places
NTM	Notice to Mariners
OEA	Overseas Environmental Assessment
OEIS	Overseas Environmental Impact Statement
OPNAVINST	Chief of Naval Operations Instruction
PMRF	Pacific Missile Range Facility
PMSR	Point Mugu Sea Range
PSCA	Pacific Spaceport Complex – Alaska
PSD	Prevention of Significant Deterioration
RCC	Range Commanders Council
re	Referenced to
RMI	Republic of the Marshall Islands
RMICHPO	RMI Cultural and Historic Preservation Office
ROI	Region of Influence
RTR	Ronald Reagan Space and Missile Test Range (formerly Ronald Reagan Ballistic Missile Defense Test Site)
SNI	San Nicolas Island
SPCC	Spill Prevention, Control, and Countermeasures
TCP	Traditional Cultural Property
TEL	Transporter Erector Launcher
tpy	Tons Per Year
UES	*Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands*
U.S.	United States
USAKA	United States Army Kwajalein Atoll
USASMDC	United States Army Space and Missile Defense Command
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
WFF	Wallops Flight Facility
WIA	Wake Island Airfield
WPRFMC	Western Pacific Regional Fishery Management Council
WWII	World War II
°F	Degrees Fahrenheit
§	Section/Part

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The United States Department of the Navy (Navy) and the United States Army (Army) have prepared this Supplemental Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) to analyze potential environmental impacts from conducting proposed Joint Flight Campaign (JFC) flight test activities. This Supplemental EA/OEA provides supplemental analysis for JFC flight test activities not included in the JFC EA/OEA completed in 2022 (Navy and Army 2022) or the JFC Supplemental EA/OEA completed in 2024 (Navy and Army 2024).

As evaluated in the JFC EA/OEA and first Supplemental EA/OEA, JFC flight testing would consist of up to six flight test launches per year at various land-based launch locations conducted over a 10-year period between 2022 and 2032. All flight tests would involve missile flight tests launched from existing land-based launch facilities, flight of the missile over open ocean areas, and terminal impact at ocean target sites. Flight testing would also involve pre-flight test activities, flight test-related support activities, and post-flight test activities.

Since completion of the JFC flight test EA/OEA and first Supplemental EA/OEA, the Action Proponents (Navy and Army) determined that additional launch sites should be considered as alternatives for JFC flight tests to meet the purpose and need of the JFC Action. To provide additional flexibility and JFC flight test data, additional sites and activities are being considered as alternatives for JFC flight test activities including flight tests from new alternative launch sites at Wake Island, Meck Islet in Kwajalein Atoll – Republic of the Marshall Islands (RMI), and San Nicolas Island (SNI) at Point Mugu Sea Range (PMSR) – California; and the use of floating target rafts in the broad ocean area (BOA[1]). The Proposed Action evaluated in this EA/OEA takes the existing JFC program, as analyzed in the 2022 and 2024 EA/OEA documents, as a baseline and considers only the addition of these three new potential launch locations in the Pacific (Wake Island, Meck Islet, and SNI), and the use of floating target rafts in the BOA of both the Pacific and Atlantic Oceans. Importantly, this Proposed Action does not increase the number of approved flight tests over the previously-analyzed six launches per year between 2022 and 2032.

Following review of the proposed additional alternatives for JFC flight test activities and launch sites, the Navy Strategic Systems Programs and Army Portfolio Acquisition Executive Fires determined that the proposed changes to the JFC Action justified development of a second supplemental EA/OEA to assess the potential environmental effects from these new activities. Supported by the U.S. Army Space and Missile Defense Command (USASMDC), the Navy and Army have prepared this Supplemental EA/OEA in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] § 4321 et seq.) and other applicable regulations, statutes, standards, policies, and procedures (see **Table 8** for detailed list).

1.2 Purpose of and Need for the Proposed Action

The purpose of the JFC flight test program remains the same as previously evaluated: to perform the land-based tests needed to prove that the Navy Conventional Prompt Strike (CPS) weapon

[1] The BOA is defined as any ocean area along the missile's flight path that is outside of territorial seas. Under maritime law, territorial seas generally extend seaward up to 12 nautical miles (nm) from a nation's official baseline (NOAA 2025a).

system and Army Long Range Hypersonic Weapon (LRHW) system meet all key performance requirements within the capabilities of the All Up Round (AUR) missile used by both systems. The Proposed Action is needed to further refine and demonstrate CPS and LRHW capabilities required to improve the United States' capabilities to respond to time-sensitive threats, thereby maintaining technical superiority against its adversaries. The successful development and fielding of the CPS and LRHW weapon systems has been identified as a National priority by the Department of Defense (DoD).

JFC land-based tests are needed to allow the Army and Navy to collect the data required to prove that weapon system development has been successful, thereby enabling these key weapon systems to be fielded to the warfighter. To meet the CPS and LRHW program objectives, test events must satisfy certain critical objectives, to include demonstrating weapon system effectiveness, demonstrating applicable design features, and establishing effective operating procedures, which also ensure the safety of the warfighter and the public. After multiple successful test flights since completion of the 2022 JFC EA/OEA, the JFC flight test program has matured to the point that new and additional data need to be collected, including additional data from raft sensors, to appropriately assess program performance.

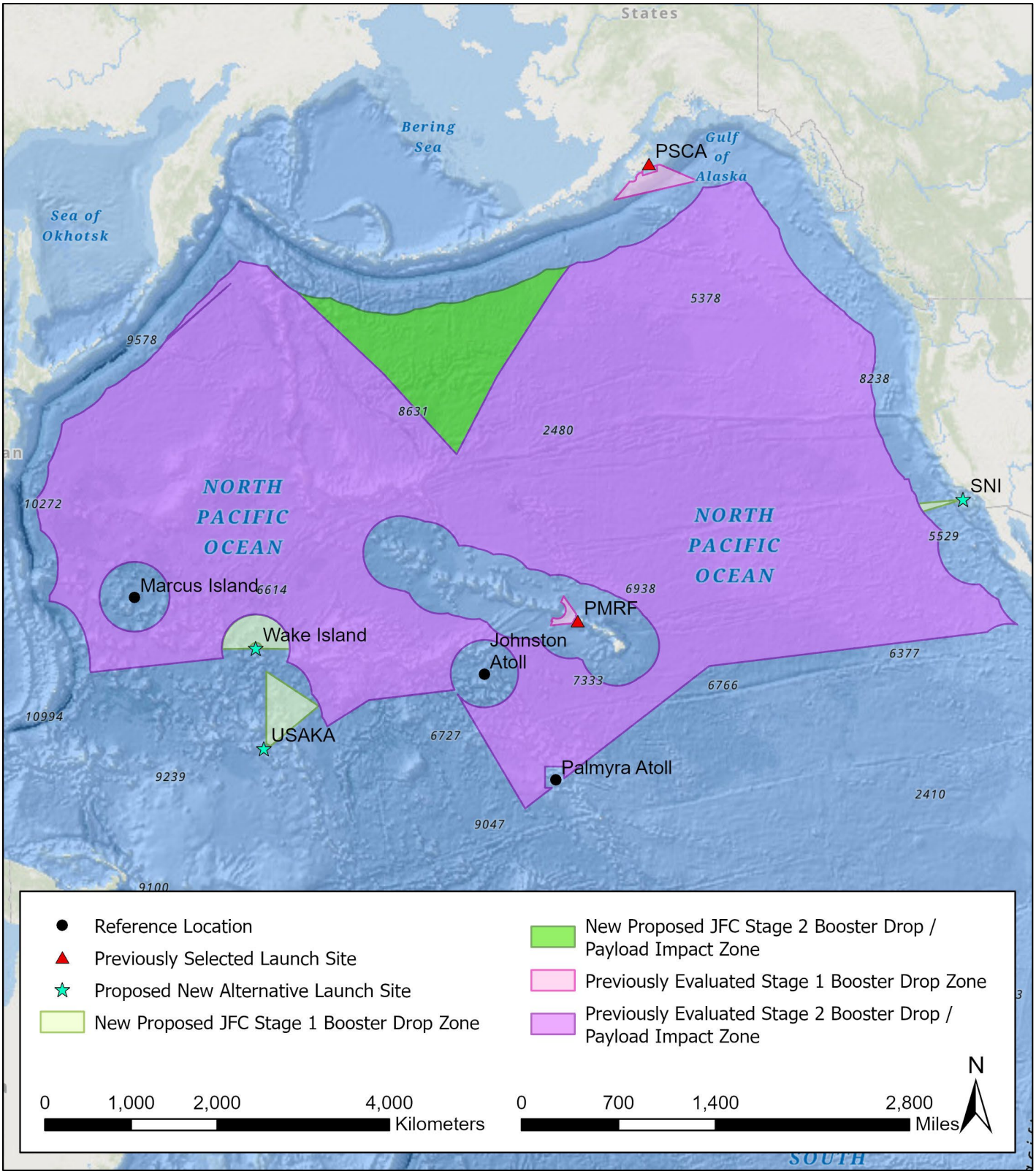
1.3 Scope of the Environmental Analysis

This Supplemental EA/OEA evaluates the potential impacts to the human and natural environment from implementing the proposed JFC flight test action changes (i.e., the Proposed Action) under new alternatives. The JFC flight test activities and activity areas that remain unchanged from the 2022 JFC EA/OEA (Navy and Army 2022) and the 2024 JFC Supplemental EA/OEA are not addressed in this Supplemental EA/OEA but are incorporated into this document by reference. The No Action Alternative is also evaluated to serve as a baseline from which to analyze the effects of the Proposed Action. Under the No Action Alternative, the Proposed Action would not occur, and the program would proceed as described in the 2022 JFC EA/OEA and 2024 JFC Supplemental EA/OEA.

The proposed new JFC flight test activities that are described and analyzed in this Supplemental EA/OEA as part of the Proposed Action consist of the following:

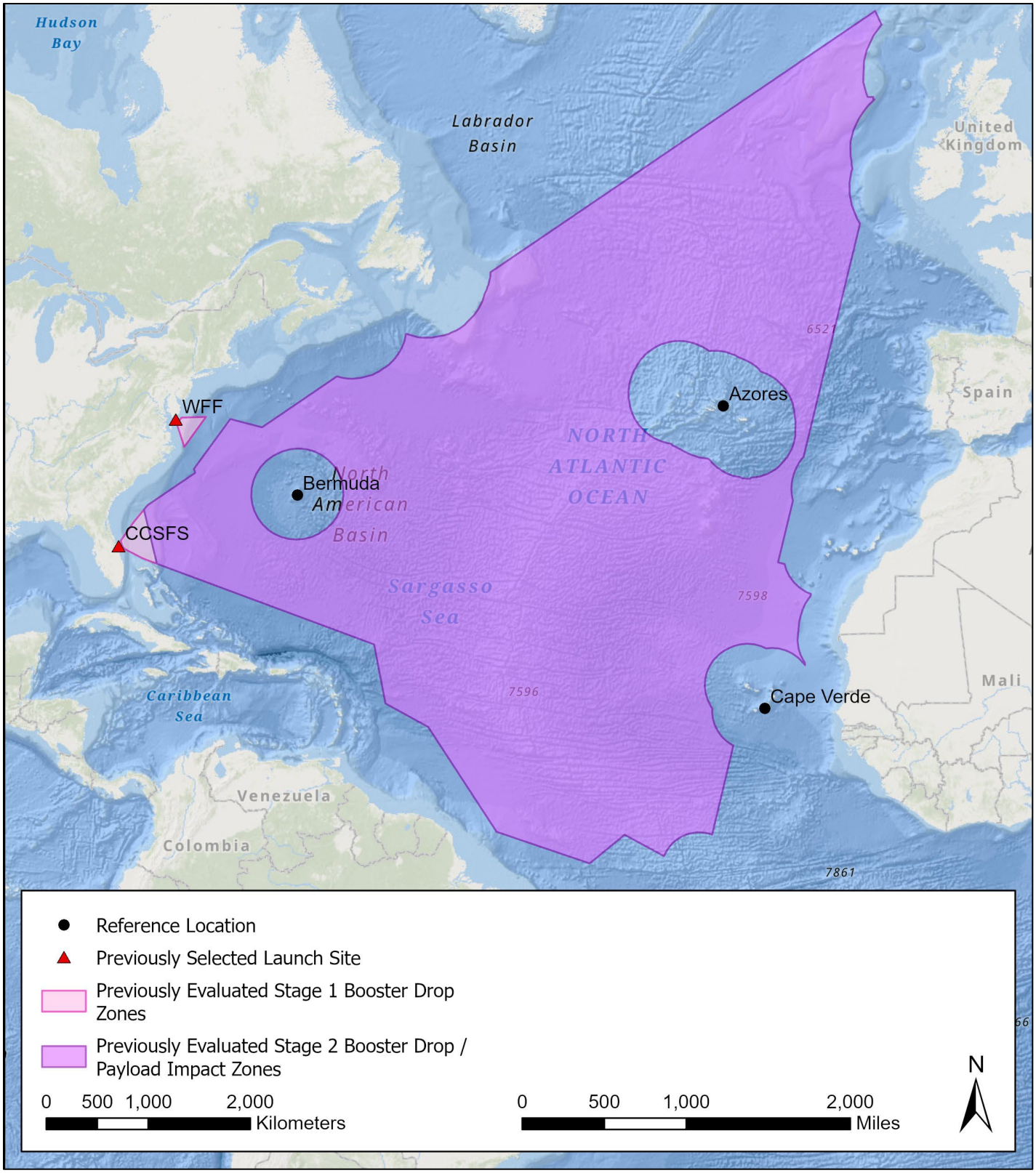
- Flight test operations from new alternative launch sites at Wake Island; Meck Islet in Kwajalein Atoll, RMI; and SNI at PMSR, California; including within expanded areas of the Pacific BOA
- The use of floating target rafts in the Atlantic and Pacific BOAs for flight tests launched from any of the new proposed or past selected alternative JFC launch sites

Supported by the information and environmental analysis presented in this document, the Navy and Army will decide whether to implement the proposed changes to the JFC flight test program under one or more new alternatives or to select the No Action Alternative. If the Navy and Army move forward with implementation of the Proposed Action, all past and proposed alternatives selected (including in the 2022 and 2024 JFC Findings of No Significant Impact [FONSI]) may be utilized for individual tests. The past selected and current proposed launch sites and BOAs for conducting JFC flight tests in the Pacific and Atlantic Ocean regions are shown in **Figure 1** and **Figure 2**. The location of each individual flight test or test campaign would be determined based on the test objectives, and the availability and technical suitability of range areas and assets.



Acronyms and Abbreviations: JFC = Joint Flight Campaign, PMRF = Pacific Missile Range Facility, PSCA = Pacific Spaceport Complex – Alaska, SNI = San Nicolas Island, USAKA = United States Army Kwajalein Atoll

Figure 1. JFC Flight Test Activity Areas in the Pacific Ocean Region



Acronyms and Abbreviations: CCSFS = Cape Canaveral Space Force Station, WFF = Wallops Flight Facility

Figure 2. JFC Flight Test Activity Areas in the Atlantic Ocean Region

1.4 Environmental Resource Topics Included for Analysis

Impact analyses presented in this Supplemental EA/OEA focus on issues or topics of importance or concern. Sixteen resource areas, or topics, were identified for consideration when evaluating the potential environmental consequences of the Proposed Action. Resource topics were retained for detailed analyses in this Supplemental EA/OEA if (1) the environmental impacts associated with the topic were of critical importance, (2) a detailed analysis was necessary to make an informed selection among alternatives, (3) the environmental impacts associated with the topic are of particular interest or concern to the public or regulators, or (4) there were potentially significant impacts to the resource. Based on preliminary analyses, it was concluded that several resource topics would have negligible or insignificant impacts and did not meet the importance or interest criteria. For resource topics not carried forward for detailed analyses, **Table D-1** in **Appendix D** provides a brief resource description and the reason(s) the topic was not carried forward for detailed analysis of environmental impacts in this Supplemental EA/OEA.

The Navy and Army have considered the factors mandated by NEPA and the Supplemental EA/OEA represents the Proponents' good-faith effort to prioritize documentation of the most important considerations required by the statute within the congressionally mandated page limits. This prioritization reflects the Proponents' expert judgment and any considerations addressed briefly or left unaddressed were, in the Proponents' judgment, comparatively not of a substantive nature that meaningfully informed the consideration of environmental effects and the resulting decision on how to proceed.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Description of the Proposed Action

The JFC flight test program was previously evaluated in a 2022 EA/OEA and a 2024 Supplemental EA/OEA. The JFC program consists of up to six flight tests annually over a 10-year period, beginning in 2022 and ending in 2032, designed to prove various aspects of the system's capabilities. A typical JFC flight test involves pre-flight test preparation activities, launch of a flight test vehicle from a land-based launch site, flight of the test vehicle and payload (the AUR) over the ocean, payload impact at a terminal ocean target site, and post-flight test cleanup and demobilization activities. The previously evaluated JFC program includes the launch of the AUR missile from an existing launch stool or from the Navy's Box Erector Launch System (BELS) or the Army's Transporter Erector Launcher (TEL) weapon system platforms from launch facilities at Pacific Missile Range Facility (PMRF) in Hawai'i, Pacific Spaceport Complex Alaska (PSCA), Wallops Flight Facility (WFF) in Virginia, and Cape Canaveral Space Force Station (CCSFS) in Florida.

The proposed additions to the previously evaluated JFC program consist of launch of the AUR missile from BELS or TEL and associated launch and flight test operations from new alternative launch sites at SNI, Wake Island, and Meck Islet, including within expanded areas of the Pacific BOA, as well as use of floating target rafts in the Atlantic and Pacific BOAs. The proposed additions to the JFC flight test program would not modify the number of annual flight tests or the timeframe for flight tests (between 2022 to 2032).

2.1.1 Pre-Flight Test Activities and Equipment

JFC pre-flight test activities for new alternative launch locations at SNI, Wake Island, and Meck Islet would include AUR transport and preparations, personnel and equipment transport and

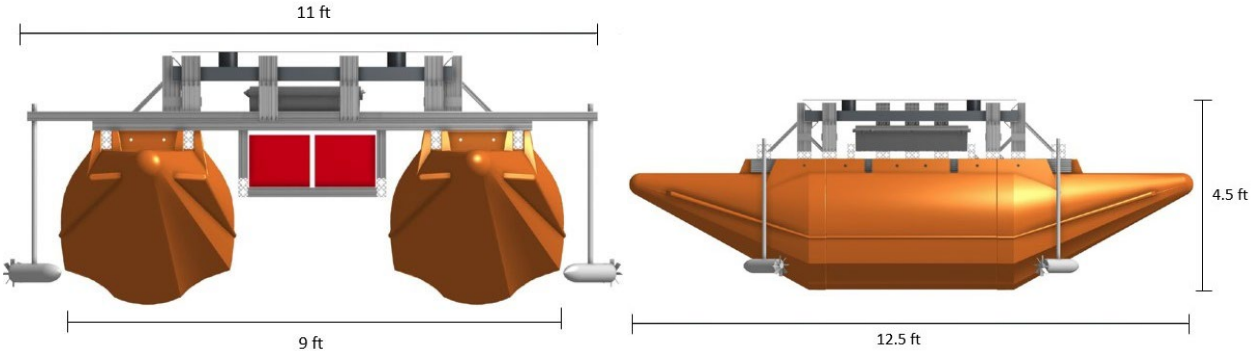
operations for preparation and support activities at launch sites, terminal target site preparations, and staging of support vessels for equipment deployment and sensor coverage operations in the BOAs as described in previous JFC EA/OEAs.

As previously described in the 2022 and 2024 EA/OEAs, standard launch site preparations for the Proposed Action would take place within 1 to 2 months prior to a test and would include final AUR assembly and integration, placement of the AUR or transportable weapons system platform on existing pad, mechanical and electrical checks, positioning and use of support vehicles such as the Battery Operations Center and Support Vehicle, demonstration of system performance prior to launch, and preflight checks. Up to 100 test program support personnel may support flight test operations at launch sites. Routine pre-flight support activities such as base/range support, range safety operations, flight test sensor support, and ground safety and equipment checks would occur prior to every JFC flight test. Pre-flight activities would adhere to existing and current security and safety guidance and procedures set by each launch installation or range including standard operating procedures to ensure the safety of workers and members of the public. Except for some launch pad and minor utility modifications detailed for specific alternatives in **Section 2.2.2.1**, all activities would use existing facilities and infrastructure. If permanent launch pad lighting is not available and nighttime launch would be conducted, temporary transportable lighting may be set up at the launch site in accordance with any installation-specific lighting requirements.

As part of planning for each flight test, range personnel would conduct a comprehensive safety analysis to determine specific launch and flight hazards associated with the test. Within days of each flight test, the Federal Aviation Administration would issue a Notice to Airmen (NOTAM) alerting the public to stay clear of the airspace hazard zones in the launch area and along the missile flight path. Additionally, the U.S. Coast Guard or Navy would issue a Notice to Mariners (NTM) alerting the public to stay clear of the ocean hazard zones. Within a day prior to launch, radar and other remote sensors would be used to verify that the hazard zones are clear of non-mission-essential aircraft, vessels, and personnel.

JFC missions would require up to 4 weeks of increased activities at terminal target sites and other support locations in the BOAs. Various test support assets would be deployed in the BOAs. A support ship would remain on-station at BOA target sites for up to 2 weeks while waiting for the test to occur. Self-stationing sensor rafts with radar, acoustic, and optical sensors may be deployed from a support ship and placed around the target site before a test and would remain on-station until conclusion of the test when they would be retrieved by a support vessel. Standard operating procedures and mitigation measures for vessel operations would be followed as specified in previous JFC EA/OEAs and vessel operators program requirements (e.g., U.S. Army Garrison – Kwajalein Atoll [USAG-KA] and PMSR).

Under the Proposed Action, some flight tests would include a floating target raft which would be used at ocean target sites within the Pacific and Atlantic BOAs. Floating target rafts would be pontoon rafts approximately 11 feet wide by 13 feet long (**Figure 3**), or a similar type of raft. The raft would be deployed from a support vessel prior to the flight test and would remain on-station for several hours, or up to a day, using small electric motors. Target rafts would include several sensor types and scoring devices. A notional list of characteristics for a typical target raft is presented in **Table 1**. Target rafts would operate only in deep-water ocean target sites and would be retrieved after each flight test.



Source: Navy 2025b
Acronyms and Abbreviations: ft = feet

Figure 3. Notional Target Raft

Table 1. Typical Target Raft Characteristics

Structural Components	Raft pontoons: high density polyethylene shell and urethane foam filler Raft frame: aluminum
Electronic Components	Sensors: hydrophones, pressure probes, camera system Electric motors Other electrical components and copper wiring
Power	Lithium-ion phosphate batteries
Other	Aluminum and steel plates

Source: Navy 2025b

2.1.2 Flight Test Activities and Equipment

All launch vehicle and payload characteristics would remain as described in previous program environmental documents and summarized in **Table 2**. A Common Hypersonic Glide Body would be used as the missile payload. Flight test payloads may be conventional or may be inert and incorporate a mass simulator. For safe handling and rapid fielding, the AUR would be encased in a launch canister to protect the missile from damage to help facilitate missile launch.

Table 2. JFC AUR Vehicle and Payload Characteristics

AUR Features	Launch Vehicle Characteristics	Payload System Characteristics
Dimensions	AUR approximately 3 feet in diameter and 30 feet in length	
Major Components / Structure	Two rocket motors/stages Magnesium, thorium, halon, asbestos	Payload adapter, payload, and shroud Aluminum, steel, titanium, magnesium, alloys, copper, fiberglass, chromate coated hardware, tungsten, plastic, Teflon, quartz, silicone
Communications	Various 5- to 20-watt radio frequency transmitters; one maximum 400-watt radio frequency pulse	Two up-to-20-watt radio frequency transmitters
Power	Up to nine lithium-ion polymer and silver zinc batteries, each weighing between 3 and 40 lb	Up to three lithium-ion polymer batteries, each weighing between 3 and 50 lb
Propulsion/Propellant	Up to 20,000 lb of Class 1.3 rocket propellant and approximately 3 lb of pressurized nitrogen gas	None
Other	Small Class C (1.4) electro-explosive devices for flight termination system	Class C (1.4) electro-explosive devices for safety and payload system subsystems operations

Acronyms and Abbreviations: AUR = All Up Round, lb = pound(s)

A typical flight test scenario would involve launch of the AUR, AUR flight over the Pacific or Atlantic Ocean, and terminal payload impact at an ocean target site (**Figures 1** and **2**). Flight tests would also involve operations of a number of existing sensors deployed during pre-flight test activities which may include vessel-, land-, or aircraft-based sensors as well as self-stationing sensor rafts.

2.1.2.1 Launch Site Flight Test Operations

Once the AUR is in place, all necessary system and safety checks have been performed, and range safety provides clearance to commence testing, the AUR would be launched from a launch stool, Navy BELS, or Army TEL (**Figure 4**). If the flight test would involve nighttime launch, existing permanent launch pad lighting or temporary transportable lighting may be used in accordance with any installation-specific lighting requirements.

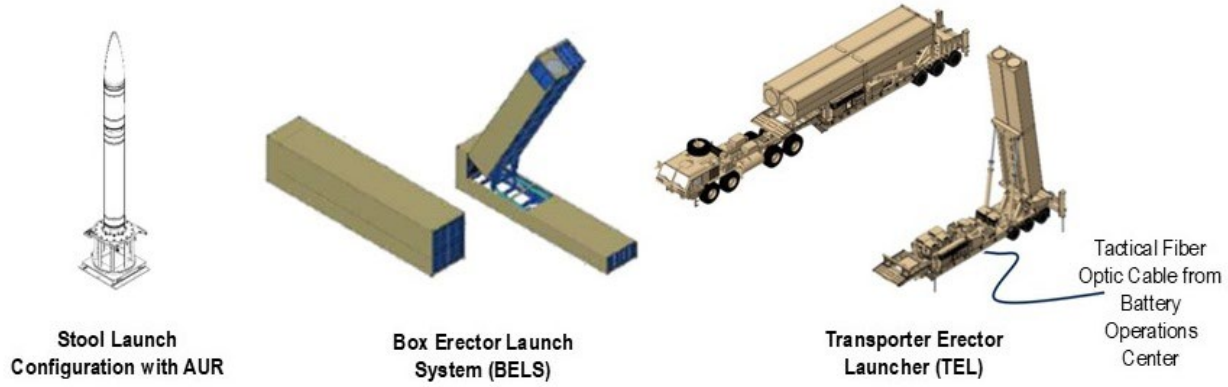


Figure 4. JFC Flight Test Launch Platforms

2.1.2.2 Downrange Flight Test Operations

Flight test activities after launch would include vehicle flight, impact of the payload in the ocean, and sensor operations. Following first-stage motor ignition and liftoff from the launch location, the first-stage motor would burn out downrange and the first stage booster would separate from the second stage with the inter-stage assembly also being jettisoned. These components would splash down in the stage 1 booster drop zones (see **Figure 1** and **Figure 2**). Farther into flight, the second stage would burn out and the second stage booster would separate, with the payload adapter also being jettisoned from the payload. The payload would fly toward a predesignated ocean target site. Splashdown of the second-stage motor, payload adaptor, and payload would occur at different points in the open ocean within the areas referred to as the stage 2 booster drop/payload impact zones (see **Figure 1** and **Figure 2**). Under the Proposed Action, the payload may impact a newly proposed target raft (described in **Section 2.1.1**) placed at the target site.

The flight path would be monitored by a series of sensors with overlapping coverage of the flight from launch until payload impact. Most sensors are part of existing programs, would be utilized under the operating procedures for those programs, and would be scheduled for use based on availability. The sensors would include the following:

- Existing ground-based optics, telemetry, and radars
- Sea-based sensors include ship-based mobile instrumentation. In addition, ship-based unmanned aerial vehicles and drones may be used for telemetry, video, and surveillance.

- Self-stationing sensor rafts with radar, acoustic, and optical sensors; deployed from support vessel(s)
- Existing optics and telemetry sensors on board military or commercial aircraft
- Safety Relay aircraft may be used as additional range safety support "off-axis" to ensure public safety. Takeoff and landing operations would occur as a part of ongoing operations for existing programs.

If the launch vehicle were to deviate from its course or should other problems occur during flight that might jeopardize public safety, the onboard flight termination system would be activated. This action would initiate a predetermined safe mode for the vehicle, causing it to fall towards the ocean and terminate flight. Based on data from other weapon system flight testing and JFC weapon system design, the reliability rate of this developmental system is expected to be high during flight testing. Flight test failures would be expected to be rare. While not expected, there is a small chance that intact components or debris might fall within a couple hundred feet from the forward face of the launcher. If this were to occur any visible components or debris would be recovered or cleaned up, as much as practicable. If flight data were to indicate insufficient energy for the payload to reach the target site, the vehicle could be directed to descend in a controlled termination into the BOA. If flight test termination were to occur within the BOA, recovery operations may be conducted to retrieve intact technologies and while most debris would be expected to sink, any visible debris found floating would be recovered, as much as practicable. All flight paths and flight termination system functions would be designed to ensure that, in the event of a failure, no flight test components or debris would descend into inhabited areas or marine protected areas.

2.1.3 Post-Flight Test Activities

Post-flight test activities would include inspections, cleanup, and personnel and equipment demobilization. At launch sites, the launch pad area would be checked for safe access before post-flight test equipment demobilization. Post-launch activities would include inspection of the launch pad facilities and equipment for damage, as well as general cleanup and performance of maintenance and repairs necessary to accommodate launches for other programs. Any mobile equipment brought to launch sites would be dismantled and packed for shipment back to its original location after each flight test. Any waste materials generated would be disposed of according to applicable range or installation procedures and policies, depending on whether the material is determined to be hazardous or solid waste.

At ocean target sites, support ships would retrieve instrumented rafts and search for any floating debris following completion of each flight test before returning to port. All or most of the flight test components would be expected to sink to the ocean bottom, including the spent booster stages. Any visible payload or other missile debris found floating would be recovered, as much as practicable. Expended rocket motors and other AUR components would typically not be recovered from the ocean following a flight test. In the event of a flight test failure, post-flight test cleanup and recovery operations may be conducted to retrieve portions of the payload or critical technologies that remain intact.

Under the Proposed Action, some flight tests would include use of a floating target raft. For these flight tests, a support vessel would return to the target site to retrieve the target after the flight test. Safety and other test support personnel would: (1) inspect the target raft for any hazards; (2) conduct an impact assessment of the raft and the test support equipment on the raft; and

(3) recover any visible test debris to the extent practicable. The raft would then be loaded onto a support ship for transport back to port. The test would not involve any intentional sinking or abandonment of the target raft or test components on the target raft (e.g., sensors and motors). It is possible that material on the target raft might be inadvertently dislodged from the raft during a flight test. If materials were dislodged from the target raft, it is expected that most materials would sink (e.g., metal components) or be cleaned up during post-test operations if found floating (e.g., pontoon foam filler material). All lithium-ion batteries used on the target raft for sensor operation would be recovered unless they were inadvertently damaged beyond the point of safe retrieval/recovery. While there is some potential for the target raft to be sunk or for test materials on the raft to be dislodged or unrecoverable, it is considered unlikely that this would occur.

2.2 Alternative Actions Including the No Action Alternative

The JFC flight test program would involve the activities described in **Section 2.1** and in previous JFC EA/OEAs. The JFC program would either continue under the No Action Alternative or with implementation of the Proposed Action, which would include addition of launch site options and use of target rafts in the BOAs. This section summarizes the previously evaluated alternatives included in the No Action Alternative and details alternatives which have been considered and would be added as part of the Proposed Action Alternatives evaluated in this Supplemental EA/OEA.

2.2.1 No Action Alternative

Under the No Action Alternative, the JFC flight test program would continue as described in the 2022 JFC EA/OEA and the 2024 JFC Supplemental EA/OEA. The existing JFC program involves launch of the AUR from launch facilities at PMRF, PSCA, WFF, and CCSFS with downrange flight activities in Pacific and Atlantic BOAs. These alternative locations were selected for the JFC flight test program based on the 2022 JFC EA/OEA (Navy and Army 2022) and the 2024 JFC Supplemental EA/OEA (Navy and Army 2024) as detailed in **Table 3**.

Under the No Action Alternative, all locations and activities included in previously signed FONSIs for the JFC flight test program would continue to be utilized. Only newly proposed alternatives described in this Supplemental EA/OEA would not occur. Due to recent changes in range scheduling and availability at launch locations previously selected and new requirements for increased flight testing in the Pacific region, the No Action Alternative may no longer have sufficient flight test options or capacity to meet JFC program needs. By not implementing the Proposed Action, the Navy and Army would not be able to meet the full purpose of proving that the Navy CPS weapon system and Army LRHW system meet all key performance requirements within the capabilities of the AUR missile used by both systems needed for deployment.

Under the No Action Alternative, previously considered JFC flight test program activities would continue to occur as described and evaluated in the 2022 JFC EA/OEA (Navy and Army 2022) and the 2024 JFC Supplemental EA/OEA (Navy and Army 2024). Therefore, all environmental consequences of the No Action Alternative would be the same as described and evaluated in the referenced NEPA documents. Because the Proposed Action described in this Supplemental EA/OEA would not be implemented under the No Action Alternative, the existing environmental conditions described in this EA/OEA for new alternative locations would not change under the No Action Alternative and there would be no impacts to baseline resource conditions at these new alternative locations.

Table 3. JFC Flight Test Program Alternative Action Locations

Launch Location	Downrange Location(s)	NEPA Analysis Considered In	Carried Forward as JFC Action Alternative	Included in Signed FONSI?
No Action Alternative				
Sandia National Laboratories / Kauai Test Facility, Pacific Missile Range Facility (PMRF), Hawai'i	Pacific BOA	2022 JFC EA/OEA	Yes	Yes, 2022 FONSI
Terminal High Altitude Area Defense Launch Site, PMRF, Hawai'i	Pacific BOA	2024 JFC Supplemental EA/OEA	Yes	Yes, 2024 FONSI
Pacific Spaceport Complex, Kodiak Island, Alaska (PSCA)	Pacific BOA	2024 JFC Supplemental EA/OEA	Yes	Yes, 2024 FONSI
Wallops Flight Facility (WFF), Virginia	Atlantic BOA	2022 JFC EA/OEA	Yes	Yes, 2022 FONSI
Cape Canaveral Space Force Station (CCSFS), Florida	Atlantic BOA	2022 JFC EA/OEA	Yes	Yes, 2022 FONSI
New Proposed Action Alternatives*				
San Nicolas Island, Point Mugu Sea Range, California	Revised Pacific BOA	This Supplemental EA/OEA	Yes, Newly Proposed	N/A
Wake Island	Revised Pacific BOA	This Supplemental EA/OEA	Yes, Newly Proposed	N/A
Meck Islet, USAKA, Republic of the Marshall Islands	Revised Pacific BOA	This Supplemental EA/OEA	Yes, Newly Proposed	N/A

*Note that the Proposed Action also includes the alternative to utilize target rafts at all downrange BOA locations.
Acronyms and Abbreviations: BOA = Broad Ocean Area, EA/OEA = Environmental Assessment / Overseas Environmental Assessment, FONSI = Finding of No Significant Impact, JFC = Joint Flight Campaign, N/A = Not Applicable, NEPA = National Environmental Policy Act, USAKA = United States Army Kwajalein Atoll

2.2.2 Alternatives Considered

Alternatives considered for implementation of the Proposed Action include launch site alternatives at three new locations (i.e., SNI, Wake Island, and Meck Islet) and use of target rafts in the Pacific and Atlantic BOAs.

2.2.2.1 New Launch Site Alternatives

The Navy and Army have considered three new launch locations for JFC flight test launch activities: SNI, Wake Island, and Meck Islet.

San Nicolas Island

As one of the Channel Islands off the coast of Southern California, SNI is located 54 nm from the U.S. mainland and measures approximately 13,370 acres in area. The island is owned by the Navy and is part of Naval Base Ventura County (NBVC) within PMSR. The island is officially uninhabited according to the U.S. Census, but at least 200 military and civilian personnel live on the island at any given time.

Due to its remote location, SNI can be used to simulate shipboard launches of missiles. The island is extensively instrumented with tracking radar, electro-optical devices, telemetry, and communications equipment necessary to support long-range and over-the-horizon weapons and combat systems testing. SNI has several test facilities that include buildings, launch areas, and a target site. The island also includes an airfield and harbor for logistics support.

One site located near the western end of SNI is being considered for JFC flight test launches. The proposed alternative launch site SN-A is in an area known as Rock Crusher at a location that has previously been used as a rocket launch site (**Figure 5**). Alternative launch site SN-A has an existing pad and an existing secondary pad 100 to 200 feet away would be used for placement of flight test ground support equipment. To accommodate placement of the Navy BELS at this site, existing rails would need to be removed from the pad and a precast 75- by 45-foot concrete pad 1.5-feet thick with embedded anchor plates would be placed on top of the existing pad.

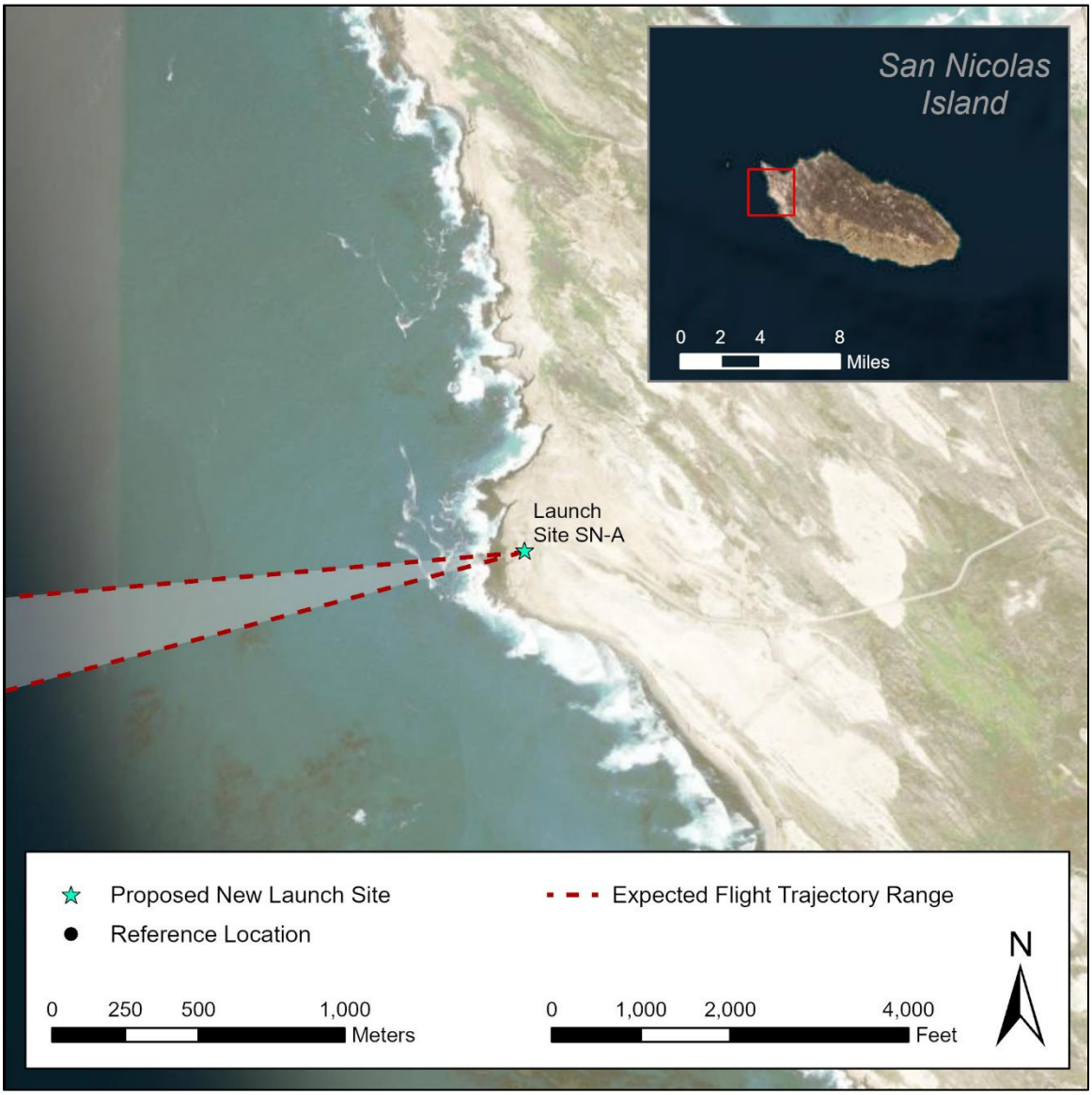


Figure 5. Proposed Alternative JFC Flight Test Launch Sites at San Nicolas Island, California

JFC flight test equipment and personnel would be transported to SNI by plane or barge from PMSR, Port Hueneme, or Long Beach. In addition to standard flight test equipment described in **Section 2.1**, transportable workspace trailers may be brought to SNI temporarily. Depending on the availability of existing lodgings at SNI during that flight test timeframe, the number of test personnel required to support a flight test may necessitate that temporary transportable accommodations be brought to SNI. All equipment brought to SNI would be operated or placed

on the new or existing concrete pads described above or on other existing paved or gravel sites or roadways elsewhere on SNI.

Existing SNI and PMSR sensors and communication equipment and facilities would be used during testing in a manner consistent with their current use at SNI. Some minor interior facility modifications and utility line upgrades (e.g., potential new fiberoptic cables) to existing SNI facilities and infrastructure may be required. While new utilities may be installed in existing conduit or other utility infrastructure, use of the site for JFC launches may require up to 450 feet of trenching.

Wake Island

Wake Island is a part of Wake Atoll, a coral atoll in the middle of the North Pacific Ocean. The atoll consists of three islands: Wake, Wilkes, and Peale. The "V" shaped atoll has approximately 1,826 acres of dry land mass and 25 miles of coastline and is surrounded by a barrier reef. Wake Island is a territory of the United States, part of the United States Minor Outlying Islands, administered by the Department of the Interior Office of Insular Affairs.

Wake Island is less than 3 square miles in area and is located about 2,460 miles west of Hawai'i and 1,590 miles east of Guam. Wake Island was developed as a stopover and refueling site for military and commercial aircraft transiting the Pacific during and after the 1940s. The island's airstrip has been used by the U.S. military and some commercial cargo planes, as well as for emergency landings. Access to the island is restricted and all current activities on the island are managed by the Department of the Air Force (Air Force) and a civilian base operations and maintenance services company. While Wake Island is managed and controlled by the Air Force Pacific Air Forces Regional Support Center, the launch facilities themselves are operated by the U.S. Missile Defense Agency (MDA). The island has been used for DoD rocket launches since the 1970s and has existing sensor instrumentation, communications, equipment, and facilities to support launch operations (MDA 2015).

The exact launch location which would be used for JFC flight test launches is yet to be determined; however, based on existing launch infrastructure, launch would take place from one of three existing launch sites on the eastern end of Wake Island in the area known as Peacock Point (**Figure 6**). The proposed alternative launch sites have all been and continue to be used for periodic DoD launches under other programs and have existing concrete or gravel pads. To accommodate placement of the Navy BELS at a launch site, a concrete launch pad or concrete footers with embedded anchor plates may need to be constructed on top of the existing launch pad infrastructure. If required, installation of a 32- by 64-foot pad, 1.5-feet thick, may be needed to allow for BELS attachment and staging of launch support equipment.

JFC flight test equipment and personnel would be transported to Wake Island by plane or vessel. In addition to standard flight test equipment described in **Section 2.1**, transportable workspace or storage trailers may be brought to Wake Island temporarily. Transportation of all materials and equipment to Wake Atoll will be conducted with appropriate biosecurity measures in place to reduce the potential for accidental transport and introduction of pest organisms. Biosecurity requirements are detailed in the Wake Island Biosecurity Management Plan (PRSC 2015) and include requirements for a biosecurity inspection of and use of pest interception methods on all containers and cargo being sent to Wake Island. All equipment brought to Wake Island would be operated or placed on existing paved or gravel sites or roadways. Existing sensors and communication equipment and facilities on Wake Island would also be used during testing.

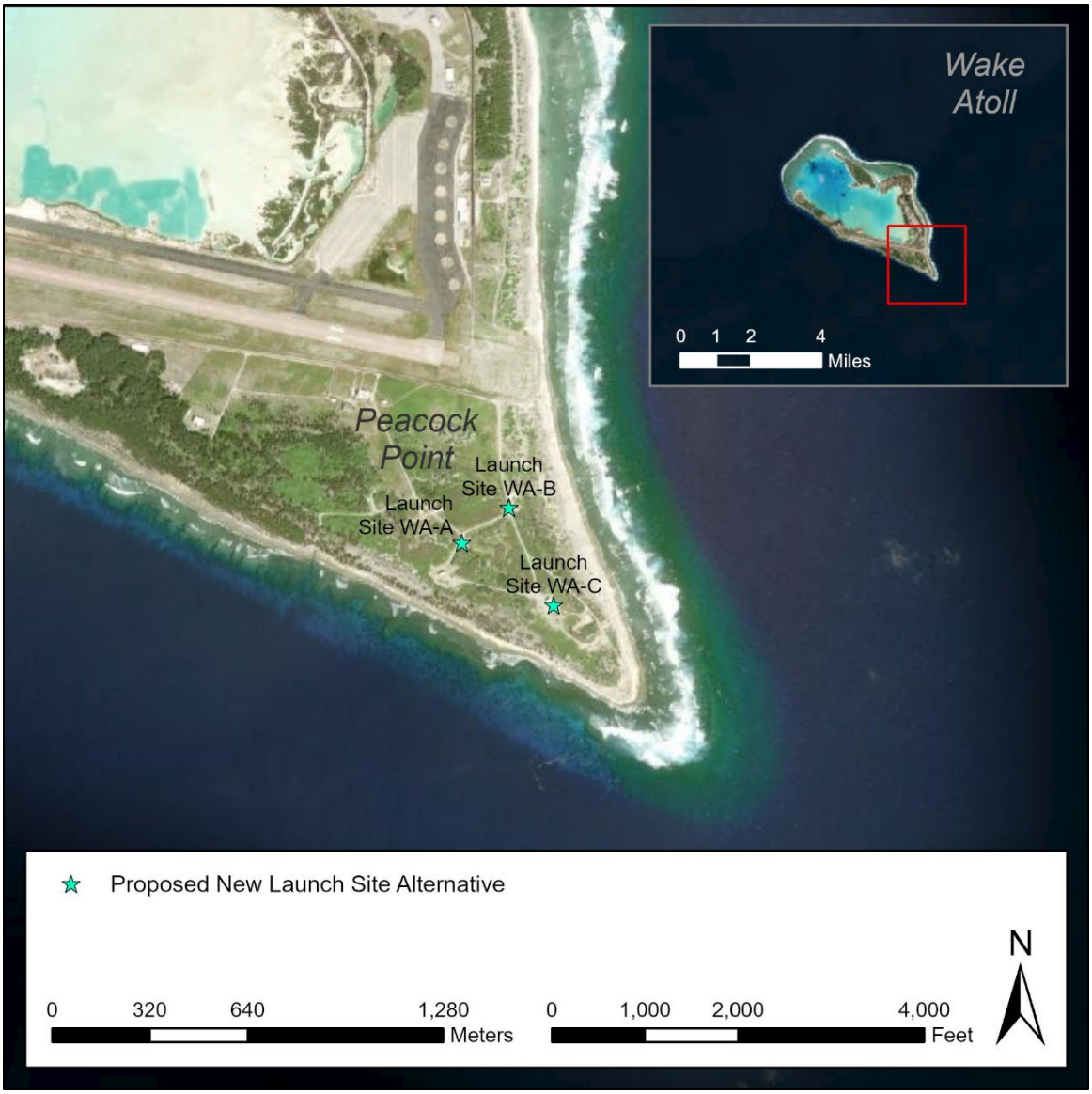


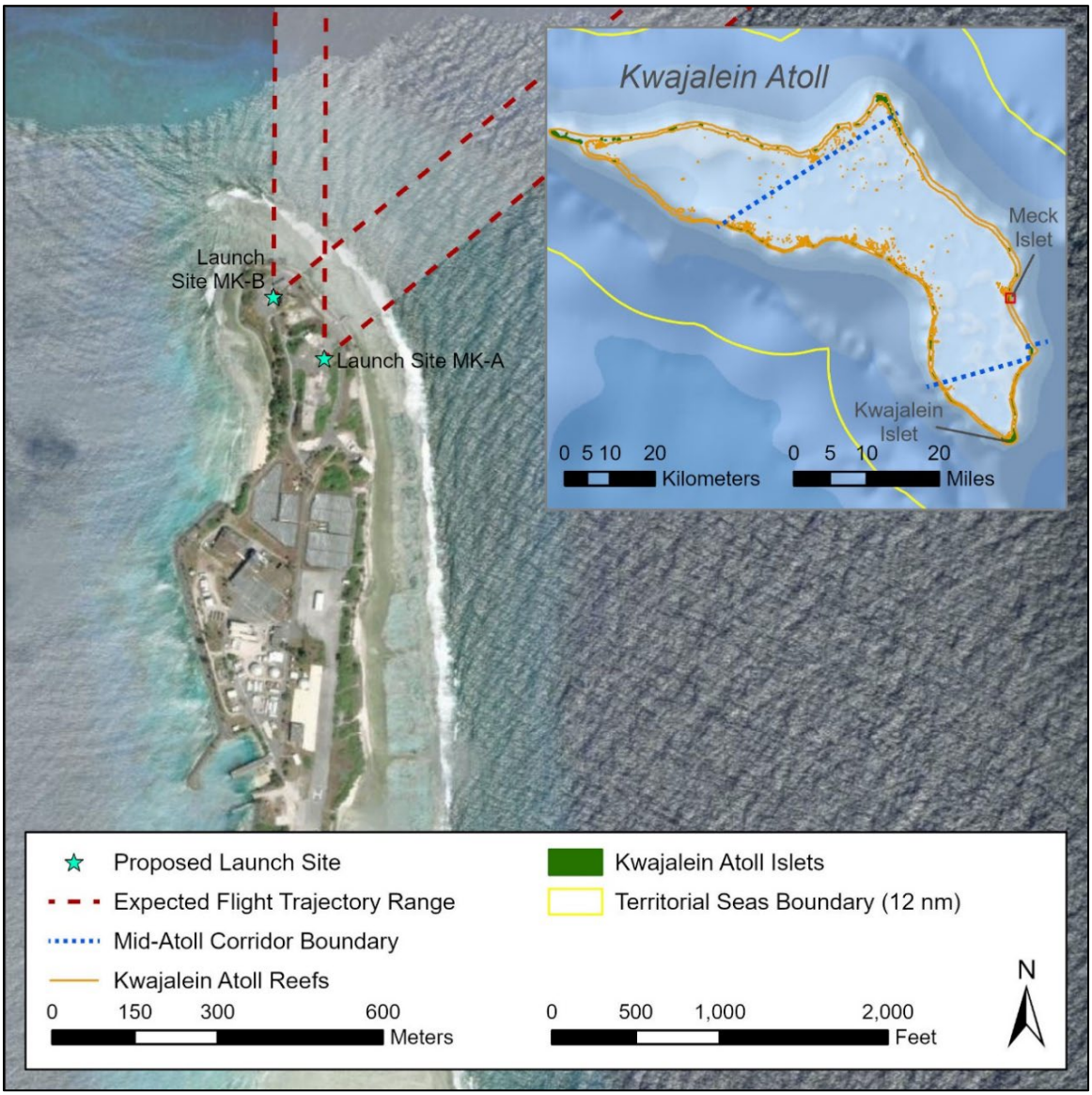
Figure 6. Proposed Alternative JFC Flight Test Launch Sites at Wake Island

Meck Islet – USAKA

Meck Islet is a 66-acre islet on the eastern side of Kwajalein Atoll in the RMI. Meck Islet is part of the United States Army Kwajalein Atoll (USAKA) Ronald Reagan Space and Missile Test Range (RTR). Meck has been used for DoD rocket launches since the 1960s. Launches take place from cleared, paved sites on the northern end of the islet (MDA 2012). On-island launch support facilities include launch control, technical support, assembly, generator, and fueling facilities (MDA 2012). Meck has a lagoon-side harbor which contains a concrete pier, a dolphin pier, and a marine ramp. A small runway on Meck is used as a helicopter landing site (MDA 2007). USAG-KA vessels and aircraft based on Kwajalein Islet are typically used to support flight test mission activities at Meck Islet, providing personnel and equipment transport.

Existing MDA launch sites and support facilities at Meck Islet are being considered for JFC flight test launch activities (**Figure 7**). Two launch sites are being considered and both have the potential

to be utilized for Proposed Action launches. The proposed alternative launch sites have been and continue to be used for periodic DoD launch and support activities as part of RTR mission activities. Proposed alternative launch site MK-A on Meck's Launch Hill has an existing concrete pad that would likely only require minor modification of the pad to install anchor plates for the Navy BELS. Proposed alternative launch site MK-B has existing asphalt over compact coral gravel. To accommodate placement of the Navy BELS at alternative launch site MK-B, a concrete launch pad or concrete footers with embedded anchor plates would need to be constructed on top of or within the existing site infrastructure. If required, installation of a 32- by 64-foot pad, 1.5-feet thick, may be needed to allow for BELS attachment and staging of launch support equipment.



Acronyms and Abbreviations: nm = nautical miles

Figure 7. Proposed Alternative JFC Flight Test Launch Sites at Meck Islet, Kwajalein Atoll

JFC flight test equipment and personnel would be transported to Meck Islet by plane or vessel via Kwajalein Islet. All equipment brought to Meck Islet would be operated or placed on existing paved or gravel sites or roadways and no new support facilities or vegetation clearing would be

required. Existing sensors and communication equipment and facilities on Meck Islet would also be used during testing.

2.2.2.2 New Downrange BOA Alternative Activities

Additional downrange BOA alternatives considered include the following: (1) expansion of the JFC flight test Pacific BOA area to align with launch from the newly considered launch site alternatives described in **Section 2.2.2.1** (see **Figure 1**) and (2) utilization of target rafts for all past and new alternative payload target sites.

The Action Proponents are considering use of target rafts in all Pacific and Atlantic BOAs. Target raft equipment and operations are described in **Section 2.1**.

2.2.3 Preferred Alternative

The Navy and Army have selected two new alternative launch locations (Wake Island and Meck Islet) and all new downrange BOA alternative activities described in **Sections 2.2.2.1** and **2.2.2.2** as the preferred alternative for implementation of the Proposed Action. The Preferred Alternative consists of JFC activities for flight tests launched from the two new alternative launch locations (i.e., Wake Island, and Meck Islet) and use of target rafts in the Pacific and Atlantic BOAs.

The SNI launch site alternative is fully evaluated in this Supplemental EA/OEA but has not been selected as part of the Preferred Alternative for implementation of the Proposed Action and as such, not all regulatory requirements would be completed for this alternative in conjunction with this Supplemental EA/OEA. If SNI were selected as a JFC launch site in the future, a number of consultations with regulatory agencies may need to be completed before the Proposed Action could be implemented at this site as detailed in **Section 3.1** and **Table 8** in **Section 4.0**.

All past selected alternatives evaluated in previous EA/OEAs (see **Table 3**) would remain a part of the JFC flight test program but are not reevaluated in this EA/OEA as they are a part of the No Action Alternative. The environmental impacts of these past selected alternatives were considered when evaluating the total environmental impact of implementation of the JFC flight test program under the Proposed Action. However, because these previously selected alternatives and activities were all evaluated in previous EA/OEAs and the potential impacts of those activities have not changed since FONSI signature, previously selected alternatives and activities are encompassed in the No Action Alternative and are not evaluated further in this Supplemental EA/OEA. Only proposed new alternatives are evaluated as part of the Proposed Action in this Supplemental EA/OEA.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment conditions and environmental consequences in the areas that could be affected by the Proposed Action. In compliance with NEPA and the DoD's NEPA implementation procedures (90 Federal Register [FR] 27857 [30 June 2025]), the information and data presented are commensurate with the importance of the potential impacts to prioritize documentation of the most important considerations required by NEPA within the congressionally mandated page limits. This Supplemental EA/OEA makes use of the best available reliable existing data and resources to inform analyses and conclusions. Key sources of information, including the 2022 JFC EA/OEA (Navy and Army 2022) and the 2024 JFC Supplemental EA/OEA (Navy and Army 2024), are incorporated by reference rather than restating conditions or analyses where they are substantively the same.

Only the resource areas with potential substantial impacts or that meet the importance or interest criteria detailed in **Section 1.4** are described in this section and analyzed in detail in this chapter. See **Table D-1** in **Appendix D** for a discussion of resource topics that were not included for detailed analysis in this Supplemental EA/OEA. Resource definitions and regulatory setting for all resources are provided in **Appendix B**.

The environmental consequences of the Proposed Action are evaluated in this section based on the conditions in the affected environment and the regulatory setting described in **Appendix B**. Resource-specific evaluation criteria may be defined in resource subsections, but in general, effects to resources are categorized as either (1) no to negligible effects, (2) minor effects, (3) moderate effects, or (4) significant effects. Negligible effects are those where there are undetectable levels of effect. Minor effects would be those where effects would be detectable but would not noticeably modify, impair, or improve the function, quality, viability, or quantity of the resource. Moderate effects would be those where effects are detectable and would noticeably modify, impair, or improve the aforementioned aspects of a resource. Significant effects would be those that substantially change the function, quality, or quantity of a resource. Effects may be direct (i.e., immediate effects) or indirect (i.e., occurring at a later point in time). Effects may also be categorized as short-term, long-term, adverse, or beneficial.

Cumulative Effects Analysis

Cumulative effects analysis is an essential component of NEPA analysis, as it allows agencies and the public to understand how the incremental effects of a proposed action may contribute to cumulative environmental problems such as air pollution, water pollution, climate change, and biodiversity loss. This section (1) describes past, present, and reasonably foreseeable future actions relevant to cumulative effects; (2) analyzes the incremental environmental effects the Proposed Action may have in combination with other actions; and (3) evaluates cumulative effects potentially resulting from these interactions. A definition of cumulative effects, the regulatory setting for the cumulative effects analysis, and the scope of the cumulative effect analysis are detailed in **Appendix B**, **Section B.9**.

Past, present, and reasonably foreseeable future actions that have potential to interact with the Proposed Action in the affected environments at SNI, Wake Island, Meck Islet, and in the BOAs have recently been documented in a number of NEPA compliance documents and are incorporated here by reference as summarized in **Table 4**. Given the large geographic extent of proposed activities, several global routine and ongoing human activities also have the potential to interact with the Proposed Action such as commercial, recreational, and subsistence fishing; aquaculture; academic research; coastal land development and tourism; and commercial, recreational, and government vessel activity. These global, routine human activities have cumulatively contributed to global trends that have the potential to interact with Proposed Action and are detailed for a large portion of the Action Area in Chapter 4 of the Hawaii-California Training and Testing (HCTT) Environmental Impact Statement (EIS) / Overseas Environmental Impact Statement (OEIS) (Navy 2025a) and Section 4.3 of the Navy CPS Weapon System Flight Tests EA/OEA (Navy 2025b).

Past actions in the geographic extent of the cumulative effects analysis have shaped the current environmental conditions in the affected environment as described in the rest of this section. While these past actions have shaped the existing conditions in the affected environment, these

activities still have the potential to have additive or interactive effects when considered with the Proposed Action and are considered in the cumulative effects analyses in this section.

Table 4. Summary of Past, Present, and Reasonably Foreseeable Actions

Location of Overlap	Description
San Nicolas Island and Point Mugu Sea Range	A full list of past, present, and foreseeable future actions used in the cumulative effects analysis can be found in: • Section 4.0 of the HCTT EIS/OEIS (Navy 2025a)
Wake Island	A full list of past, present, and foreseeable future actions used in the cumulative effects analysis can be found in: • Section 3.11.4 of the Draft Programmatic EA for Construction and Demolition of Facilities at Wake Island Airfield (DAF 2024a) • Section 3.1.1 of the Draft EA for installation development projects at Wake Island Airfield (DAF 2024b)
Meck Islet and United States Army Kwajalein Atoll	A full list of past, present, and foreseeable future actions used in the cumulative effects analysis can be found in: • Section 2.4 of the Notice of Proposed Activity for RTR Programmatic Mission Flight Test Activities (USASMDC 2025) • Section 4.3.1 of the Navy Conventional Prompt Strike Weapon System Flight Tests EA/OEA (Navy 2025b)
Broad Ocean Areas	A full list of past, present, and foreseeable future actions used in the cumulative effects analysis can be found in: • Section 5.3 of the JFC Flight Tests EA/OEA (Navy and Army 2022) and Supplemental EA/OEA (Navy and Army 2024) • Section 4.3.1 of the Navy Conventional Prompt Strike Weapon System Flight Tests EA/OEA (Navy 2025b) • Section 2.4 of the Notice of Proposed Activity for RTR Programmatic Mission Flight Test Activities (USASMDC 2025) • Section 4.0 of the HCTT EIS/OEIS (Navy 2025a)

Acronyms and Abbreviations: EA = Environmental Assessment, EIS/OEIS = Environmental Impact Statement / Overseas Environmental Impact Statement, HCTT = Hawaii California Training and Testing, RTR = Ronald Reagan Space and Missile Test Range

3.1 San Nicolas Island, Point Mugu Sea Range

General conditions at SNI are described in **Section 2.2.2.1**. This Supplemental EA/OEA focuses on the potential for environmental impacts of implementation of the Proposed Action at SNI and in nearshore territorial waters (within 12 nm of the territorial baseline) within the Region of Influence (ROI). SNI is currently not part of the Preferred Alternative for implementation of the Proposed Action. If SNI were selected as a JFC launch site in the future, a number of consultations with regulatory agencies may need to be completed before the Proposed Action could be implemented at this site as detailed in this section and in **Table 8** in **Section 4.0**.

The existing environmental conditions at SNI and PMSR were recently detailed in the HCTT EIS/OES (Navy 2025a). This EIS/OEIS (Navy 2025a) also evaluated the environmental consequences of ongoing DoD training and testing missions at PMSR and is incorporated in this section by reference where applicable.

3.1.1 Air Quality at SNI

3.1.1.1 Affected Environment for Air Quality at SNI

The ROI for the air quality analysis at SNI includes the entire island, where missile flight tests, pre- and post-flight test activities, and other flight test-related support activities would occur, as

well as the area within 3 nm of the island. This area represents the applicable air quality management boundary under the jurisdiction of the state and encompasses the zone where project-related emissions could contribute to ambient pollutant concentrations and California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS) attainment status. Beyond 3 nm, emissions disperse over open ocean, often diminishing their impact on measured air pollutant levels.

SNI is excluded from the Ventura County ozone federally designated nonattainment area (VCAPCD 2022; see **Appendix B**, **Section B.2.2.1**); therefore, the island is considered by the U.S. Environmental Protection Agency (USEPA) to be in attainment or unclassifiable for the NAAQS. In addition, because SNI is 54 nm from the California mainland and outside the air basin boundaries typically used in CAAQS designations, the island is generally considered as in attainment or unclassifiable for the state standards.

In general, air quality in offshore areas is better than adjacent onshore areas due to the greater dispersion of air pollutants by strong oceanic winds and the absence of large emissions sources such as industry and dense populations. There are no air quality monitoring stations on SNI (Navy 2022). The primary sources of air emissions on SNI include vehicle and aircraft operations, fuel combustion from diesel generators, marine vessel activities, and launch operations.

SNI experiences a Mediterranean coastal climate, characterized by cool, wet winters and warm, dry summers, with strong maritime influences. Average high temperatures in summer are typically in the upper 60s to low 70s degrees Fahrenheit (°F), moderated by frequent marine layer clouds and persistent westerly winds. Winters are mild, with average lows within the 50s °F and occasional light rainfall associated with Pacific storm systems. Rainfall is typically highest from December through March, with average annual precipitation under 9 inches per year (WRCC 2010). Over time, SNI and the broader Southern California offshore region have experienced warming sea surface temperatures, increased coastal fog variability, and heightened concern over long-term drought. A dominant feature of the weather in the Channel Islands is the prevailing northwest wind, with average wind speeds of 10 to 20 miles per hour and maximum gusts recorded at 60 miles per hour. The interaction between the cold ocean waters and warmer inland air commonly generates dense marine fog, particularly during late spring and early summer. These strong winds, persistent fogs, and the island's varied topography create localized climate zones across the island.

3.1.1.2 Environmental Consequences for Air Quality at SNI

Effects on air quality were evaluated by comparing the annual net change in emissions against the Prevention of Significant Deterioration (PSD) permitting threshold of 250 tons per year (tpy) for all criteria pollutants except for lead, for which the threshold is 25 tpy. Under the Clean Air Act (CAA), the indicator of significance for criteria pollutants in an attainment area is the PSD threshold. These PSD values are being used for NEPA purposes as first-tier air quality significance indicators. Emissions from the Proposed Action at SNI would occur from delivery of components to SNI, delivery of the launch vehicle and equipment to the launch pad on SNI, minor facility upgrades (e.g., potential new fiberoptic cables installed in existing conduit or other utility infrastructure), personnel vehicle use during pre-and post-launch activities, deployment of support assets to terminal target sites, flight test operations including the launch event, and demobilization activities including launch pad repairs, if needed. Air emissions would also occur from modification of the existing pad and placement of a new launch pad at alternative launch

site SN-A. This construction would be consistent with the mission and ongoing activities at PMSR and minimal ground disturbance would occur (less than 0.5 acre); therefore, the emissions from pad construction are expected to be negligible.

The Proposed Action does not increase the number of approved flight tests that were previously analyzed in the JFC EA/OEA and first Supplemental EA/OEA. However, under the Proposed Action, up to six launches per year could occur at SNI, resulting in a net increase in air emissions on the island. To assess the upper-bound scenario, the analysis assumes up to six launches per year from a single site, even though conducting all six launches from the same location within the same year may be unlikely. This assumption was used to determine whether the maximum potential annual emissions would remain below the applicable significance indicator level.

Estimated annual emissions from proposed launch activities are included in **Table 5**. The majority of vessel operations to support a launch event would occur outside of the SNI ROI; therefore, vessel emissions were considered to be negligible and not included in the table. Estimated annual emissions from launch operations would not exceed significance indicator levels for any criteria pollutant. Therefore, impacts on air quality from the Proposed Action at SNI would be minor.

Table 5. Estimated Annual Emissions from JFC Launch Operations

Activity	VOC (tons)	SO_X (tons)	NO_X (tons)	CO (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	Pb (tons)
Single Launch Event							
Pre-Launch Preparation and Support Activities [1]	0.231	0.003	0.429	2.046	0.033	0.033	N/A
Launch Support Activities [1]	0.003	0.008	0.594	0.033	6.072	4.257	N/A
Post-Launch Activities [1]	0.198	0.003	0.033	0.231	0.003	0.003	N/A
Single JFC AUR Launch [2]	N/A	<0.001	0.030	0.001	0.360	0.250	N/A
Total Emissions for Single Flight Test Event	**0.432**	**0.014**	**1.086**	**2.311**	**6.468**	**4.543**	**N/A**
Total Annual Emissions							
Total JFC Emissions for 6 Launch Events	**2.592**	**0.084**	**6.516**	**13.866**	**38.808**	**27.258**	**N/A**
Significance Indicator Level (tpy)	**250**	**250**	**250**	**250**	**250**	**250**	**25**
Exceeds Significance Indicator?	**No**	**No**	**No**	**No**	**No**	**No**	**N/A**

Sources: Navy and Army 2024; DAF 2019, Navy 2025b
Notes:
[1] Emissions data for launch activities were derived from the 2024 JFC Supplemental EA/OEA (Navy and Army 2024), which used emissions from a Minuteman III launch as a surrogate. Pre-Launch, Launch Support (non-missile emissions), and Post-Launch Activity emissions were conservatively scaled up by a factor of 3.3 based on the difference in man-months of activity comparing the JFC launch activities to the Minuteman III launch activities (DAF 2019); 200 man-months vs. 60 man-months (200÷60 = 3.3).
[2] Emissions data for the JFC AUR launch were derived from the 2025 CPS EA/OEA (Navy 2025b).
Acronyms and Abbreviations: AUR = All Up Round, CO = carbon monoxide, CPS = Conventional Prompt Strike, JFC = Joint Flight Campaign, N/A = Not Applicable, NO_X = nitrogen oxides, Pb = lead, $PM_{2.5}$ = particulate matter measured less than or equal to 2.5 microns in diameter, PM_{10} = particulate matter measured less than or equal to 10 microns in diameter, SO_X = sulfur oxides, tpy = tons per year, VOC = volatile organic compound

Given the prevailing northwest winds and strong maritime influences at SNI, emissions from the Proposed Action are expected to disperse rapidly over the open ocean. In addition, due to the limited potential frequency of launches (up to six per year) and the absence of nearby population

centers, emissions are not expected to affect ambient air quality or result in localized or regional air pollution. As it would be unlikely that six launches would occur at SNI in the same year, actual emissions may be lower than what was estimated.

3.1.2 Biological Resources at SNI

3.1.2.1 Affected Environment for Biological Resources at SNI

The best available information regarding the affected environment for resources at SNI can be found in Sections 3.3 through 3.9 of the HCTT EIS/OEIS (Navy 2025a), Sections 3.3 through 3.9 of the PMSR EIS/OEIS (Navy 2022) and Section 3.1.8 of the Defense Advanced Research Projects Administration (DARPA) Launch Challenge EA/OEA (DARPA 2020) which are incorporated here by reference. Primary biological resources of importance or concern in the ROI at SNI are Endangered Species Act (ESA)-listed species near the new launch pad and support pad areas, marine mammals hauled out on land at SNI, and nearshore marine resources. Definitions related to Biological Resources and the regulatory environment can be found in **Appendix B**, **Section B.3**. A list of special-status species in the SNI ROI can be found in **Appendix D**, **Table D-2** and **Table D-5**.

Terrestrial Vegetation and Wildlife

Terrestrial vegetation near the alternative launch pad and support locations is sparse. The area has vegetation associated with barren (rocky) areas, inland dunes, and largely unvegetated beach (DARPA 2020). Inland dunes in the vicinity of the Rock Crusher Launch Pad are stabilized by non-native and widespread plants such as hottentot fig and Trask's milkvetch (DARPA 2020). No ESA or State of California listed plant species are known to occur in or near the alternative launch pad or support activity areas (DARPA 2020).

SNI has a limited diversity of terrestrial wildlife due to sparse vegetation, arid climate, geographic isolation of the island, and due to the introduction of non-native species (DARPA 2020). However, a number of endemic species occur on SNI such as the SNI fox, island night lizard, and several snail species (DARPA 2020). The wildlife of most concern or importance relative to the Proposed Action are special-status species of birds and marine mammals.

Birds. The over 300 bird species known to occur on SNI are almost all protected under the Migratory Bird Treaty Act (MBTA) (DARPA 2020, Navy 2022). The bird species with the highest potential to be affected by the proposed activities are Western snowy plovers; SNI-nesting seabirds such as Brandt's cormorants and Western gulls which both have nesting locations as close as 1,200 feet from the alternative launch pad site; and other seabirds, such as brown pelicans, which roost on the island (DARPA 2020, Navy 2022).

Western snowy plovers are listed as threatened under the ESA. Western snowy plovers use the beaches and coastal dunes in the Rock Crusher area and the alternative launch pad site for both breeding and non-breeding activities (Navy 2014, Navy 2022). The nesting season for this shorebird extends from early March to late September with peak nesting from mid-April to mid-June (USFWS 2007). While western snowy plovers historically nested around the Building 807 / Rock Crusher Launch Complex, the species has not been documented nesting there recently (Navy 2022). Outside of the breeding season, western snowy plovers rest and forage in coastal habitats of SNI throughout the year, including in coastal areas near the alternative launch site.

Mammals. The SNI fox and the SNI deer mouse are two native terrestrial mammals which occur on SNI. The SNI deer mouse is endemic to SNI but is widely distributed on the island and is found in all habitat types (NBVC 2015). The SNI fox is an endemic subspecies listed as a threatened species by the State of California. The SNI fox is common throughout all terrestrial habitats at SNI, but is found in higher densities in areas with native vegetation and lower densities in barren areas and non-native grasslands (DARPA 2020).

Three species of marine mammals regularly haul out on SNI beaches: northern elephant seals, harbor seals, and California sea lions. These species, like all marine mammals, are protected under the Marine Mammal Protection Act (MMPA). These pinnipeds may haul out in areas near the alternative launch pad site and are known to molt, breed, and give birth on SNI as detailed in the PMSR EIS/OEIS (Navy 2022).

Marine Vegetation and Wildlife

Marine vegetation in PMSR consists primarily of phytoplankton and algae. A variety of phytoplankton, macroalgae, and some vascular plants are important primary producers which provide the base of marine food chains and habitats. Kelp forests are important nearshore habitats which occur on hard, rocky substrates and provide the basis for diverse and abundant communities of other algal species, invertebrates, fish, sea turtles, and marine mammals. There are no known special-status vegetation species in the ROI but kelp forests in the area are the basis for diverse and important nearshore communities. (DARPA 2020, Navy 2022)

The HCTT EIS/OEIS (Navy 2025a) and PMSR EIS/OEIS (Navy 2022) provide extensive detailed descriptions of the diverse marine wildlife at PMSR and in a larger ocean area where Navy training and testing activities regularly occur. These descriptions and DARPA 2020 are incorporated here by reference, and this section focuses on marine species of particular importance or concern relative to the potential effects of the Proposed Action. While a number of special status (i.e., ESA, MMPA, and MBTA listed) fish, seabird, reptile, and marine mammal species occur in the ROI waters offshore of SNI, these species have limited potential to be affected by proposed activities and are described in detail elsewhere (see Navy 2025a, Navy 2022, and DARPA 2020).

Invertebrates. ESA-listed invertebrates known to occur in PMSR are the endangered white abalone and the black abalone. White abalone are typically found in subtidal waters 16 to 197 feet deep and are most abundant at depths of 130 to 160 feet (NMFS 2018). Black abalone occur in the intertidal zone, generally on rocky substrates in the middle and lower intertidal zone (Navy 2018). These species are known or likely to occur in intertidal areas nearshore of the alternative launch site. Abalone populations have declined dramatically in the last 40 years (NMFS 2018). Critical habitat has been designated for the black abalone, but no critical habitat for black abalone occurs near SNI.

Marine Mammals. Many marine mammals may use nearshore and open ocean habitats of the ROI at SNI including the pinnipeds that regularly haul out on SNI, several cetaceans, and southern sea otters. The only marine mammal species likely to occur in nearshore waters of SNI and likely to haul out on SNI are three pinniped species (northern elephant seals, harbor seals, and California sea lions) and southern sea otters. The southern sea otter is listed as a threatened species under the ESA. The primary range of southern sea otters is north of the ROI; however, some sea otters occur farther south seasonally, and a small experimental population has been translocated to SNI (Navy 2025a, DARPA 2020). The 2016 National Defense Authorization Act

established Southern Sea Otter Military Readiness Areas at SNI (including Begg Rock) and the adjacent and surrounding waters (NBVC 2015). Incidental takings (as defined in the ESA and MMPA) of southern sea otters in the Southern Sea Otter Military Readiness Areas shall not apply with respect to the incidental taking in the course of conducting a military readiness activity (NBVC 2015).

Environmentally Sensitive Habitats and Protected Areas

Essential Fish Habitat (EFH). EFH geographic boundaries have been designated by the Pacific Fisheries Management Council under the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act. Within the ROI, EFH has been designated for Pacific coastal pelagic species, Pacific coast groundfish, and west coast highly migratory species as detailed in the fisheries management plans for these management units (PFMC 2024a, PFMC 2025, PFMC 2024b). The designated EFH includes all marine and estuarine waters above the thermocline from the shoreline offshore to 200 nm offshore (PFMC 2024a). Areas of nearshore waters directly offshore of the alternative launch site are also designated as canopy kelp habitat areas of particular concern (HAPC). Kelp forests are very important to the marine ecosystem in this region and provide important habitat for fisheries species such as groundfish (PFMC 2025). Canopy kelp HAPC includes subtidal waters, substrate, and other habitat associated with canopy-forming kelp species (PFMC 2025).

Designated Critical Habitat. Critical habitat for the Central America Distinct Population Segment (DPS) and Mexico DPS of humpback whales overlaps the study area but only over a small area under the proposed vehicle flight path in and near PMSR. These designated critical habitat areas include waters which serve as seasonal feeding habitat for these DPSs as described in 86 FR 21082 (April 21, 2021).

Marine Protected Areas. The California Coastal National Monument spans the entire coastline of California as described in Chapter 6 of Navy 2025a. The Navy and Bureau of Land Management have a memorandum of understanding with regards to implementation of Navy training and testing activities in the vicinity of monument resources to avoid affects.

3.1.2.2 Environmental Consequences for Biological Resources at SNI

The Proposed Action has the potential to impact biological resources in the SNI ROI through exposure to elevated sound levels, direct contact from launch debris, exposure to hazardous materials, and disturbance due to increased human activity and equipment operation as summarized in **Table D-6** in **Appendix D**. Based on the existing habitat and lack of important or sensitive biological resources in proposed pad construction areas, direct impacts due to habitat loss or physical injury from pad construction or utility trenching would be nonexistent to negligible and are not discussed further.

Because Proposed Action activities at SNI are occurring entirely within the existing PMSR and at SNI, proposed operations would comply with applicable standard operating procedures established for routine training and testing in the HCTT EIS/OEIS (Chapter 5 of Navy 2025a) as summarized in **Appendix C**. These measures would include compliance with biosecurity requirements detailed in NBVC Instruction 5090.14B, *Biological Resource Security Requirements for Air and Barge Transport of all Cargo to San Nicolas Island.* Except for proposed pad construction, the potential impacts of the Proposed Action on biological resources would be within the envelope of training and testing activities evaluated in the Navy's HCTT

EIS/OEIS (Navy 2025a) and similar to impacts at other JFC launch locations (Navy and Army 2022, Navy and Army 2024).

Consequences for Terrestrial Vegetation and Wildlife

There would be no to negligible impacts to terrestrial vegetation at SNI. Plants near the launch pad may be temporarily affected by heat and emissions from vehicle launch. However, based on studies of vegetation conducted after other launches, no long-term effects on vegetation would be expected (Navy and Army 2024). Vegetation would be expected to return to normal within a year of the launch and there would be no adverse impacts to special-status, rare, or otherwise important vegetation or habitats.

Impacts on terrestrial wildlife would be minor and short term. Primary concerns at SNI include disturbance of nesting western snowy plovers and hauled out pinnipeds. Western snowy plovers might be disturbed by human activity, equipment operation, and noise from construction and vehicle launch. Based on expected noise levels and location of activity, the potential effects of Proposed Action would be short-term and would have minor impacts on Western snowy plovers. While activities are consistent with ongoing operations at SNI, additional consultation under Section 7 of the ESA may be required for implementation of the Proposed Action under this alternative. Under normal operations, the Proposed Action would not result in any direct contact from falling components at SNI. Even in the event of an ignition failure during a BELS launch in which the AUR or debris fell onto SNI, direct contact and hazardous chemicals from the vehicle would not reduce the population size or distribution of sensitive biological resources.

Pinnipeds hauled out on SNI have been documented to exhibit behavioral responses due to noise from missile launches at SNI (Navy 2025a). Extensive information regarding potential effects of launch noise on pinnipeds, effect thresholds, and observed responses is detailed in Navy 2025a and Navy 2022. Based on the expected sound levels for JFC launches from the alternative launch site, noise would be within the envelope evaluated for Navy testing at SNI and the effects would be limited to minor, short-term behavioral effects but no long term displacement threshold shift, or injury (Navy 2025a). The Navy routinely obtains letters of authorization for Level B harassment of hauled-out pinnipeds due to launch of missiles at SNI in accordance with the MMPA. If SNI is selected for implementation of the Proposed Action, additional coordination and consultation under the MMPA may be required for potential effects to hauled-out pinnipeds. Overall, the Proposed Action would have minor short-term impacts on hauled out pinnipeds.

Consequences for Marine Vegetation and Wildlife

No impacts to most nearshore vegetation and wildlife are expected due to proposed activities at SNI. Under normal operations, the Proposed Action would not result in any direct contact from falling components at SNI. Even in the unlikely event of a launch incident in which the vehicle or vehicle fragments fell onto SNI, it is not expected that debris would fall into nearshore waters. Any vessels transporting equipment to SNI would use established vessel routes, harbors, and docks used for normal operations at PMSR.

While pinnipeds that haul out on SNI and some cetacean species use nearshore waters, these animals would not be affected by vehicle overflight during a flight test or by the limited routine vessel traffic associated with the Proposed Action. Sea otters have the potential to be affected by behavioral disturbance during vehicle launch at SNI and overflight. However, as described in the HCTT EIS/OEIS (Navy 2025a), sea otters show little if any response to noise and would not

occur in areas where Proposed Action vessel activity would occur. The Proposed Action would have no to negligible effects on marine animals, including southern sea otters in nearshore waters of SNI.

Consequences for Environmentally Sensitive Habitats and Protected Areas

The primary ways that the Proposed Action might impact environmentally sensitive habitats are through introduction of hazardous materials or by direct contact from test components, debris, or equipment operations. Almost all of the environmentally sensitive habitats in the SNI ROI are in coastal areas where almost no proposed activities would occur. These environmentally sensitive habitats almost all occur in Navy Operating Areas, in which there are existing standard operating procedures in place for Navy activities (see **Appendix C**).

Essential Fish Habitat. Only vessel traffic might occur within EFH. Based on the limited scope and the type of activities which might occur in EFH, the Proposed Action would not reduce the quality and/or quantity of EFH or canopy kelp HAPCs. No impacts to EFH, including canopy kelp HAPCs, are expected as a result of the Proposed Action.

Designated Critical Habitat. The Proposed Action would have no effect on designated critical habitat for the Central America DPS and Mexico DPS of humpback whales. The only Proposed Action activity which might occur in these habitat areas is vessel traffic which would have no effect on the critical habitat or the physical and biological features essential to humpback whales.

Marine Protected Areas. The Proposed Action would be implemented in accordance with ongoing Navy training and testing activities in the vicinity of monument resources and there would be no impacts to the California Coastal National Monument.

3.1.3 Cultural Resources at SNI

3.1.3.1 Affected Environment for Cultural Resources at SNI

The ROI for potential impacts to cultural resources at SNI includes work areas associated with JFC flight test launch operations, including payload processing, transport, and launch. Regulations regarding the treatment of cultural resources at SNI are summarized in **Appendix B**, **Section B.4.2.1** and more detailed information on the regulatory framework and affected environment for cultural resources can be found in Sections 3.10 and 4.4.10 of the PMSR EIS/OEIS (Navy 2022) and the SNI Integrated Cultural Resources Management Plan (ICRMP; Gold et al. 2019). Relevant information regarding cultural resources at SNI from these sources is incorporated here by reference, with issues of particular concern or importance relative to the Proposed Action summarized below.

Historical and Ethnohistorical Background

SNI was initially inhabited by Native Americans more than 10,000 years ago. Europeans first began exploring the region during the sixteenth century, at which time SNI was inhabited by a group sometimes referred to as the Nicoleño. By 1853, all the Nicoleño had been removed from SNI. The United States acquired SNI in 1848 at the close of the Mexican-American War, and in 1933, control of the island was transferred to the United States Navy. After the onset of World War II (WWII), the Navy granted use of the island to the Army. In 1942, the Army began developing a new airfield and an administrative center known as “Nicktown” on the eastern portion of SNI, and development continued after the war. In 1946 Point Mugu and SNI were commissioned as sites for the Naval Air Missile Test Center for guided missile testing and

evaluation during the Cold War. SNI was used during this period to track and monitor many of the weapons launched from mainland facilities (Gold et al. 2019).

Previous Investigations and Known Cultural Resources

SNI has been the subject of archaeological investigations since the late nineteenth century. As of 2019, 39 archaeological studies have been conducted at SNI, resulting in the identification of at least 584 archaeological resources. Additionally, 20 shipwrecks have been identified in the waters surrounding SNI (Gold et al. 2019). The highest concentration of known archaeological sites is in the northwestern portion of SNI. Many of the prehistoric resources consist of midden sites, but also include habitation sites, lithic reduction areas, rock art, isolated hearths, shellfish processing sites, and human burials (Navy 2022). One archaeological resource (CA-SNI-168) has been determined to be eligible for the National Register of Historic Places (NRHP), while the remaining 583 have not been formally evaluated and are considered potentially eligible for the NRHP (Gold et al. 2019). The Pechanga Band of Luiseño Indians has also provided information to the Navy identifying two additional potential historic properties – a traditional cultural property (TCP) and an archaeological district claimed by the Pechanga Band of Luiseño Indians to encompass all of SNI (Navy 2022).

A total of 335 built environment resources have been recorded on SNI and 203 have been determined ineligible for the NRHP while 132 are unevaluated. Currently there are no NRHP-eligible buildings located on SNI. No historic-era landscapes, districts, monuments, or memorials have been identified on SNI (Gold et al. 2019).

3.1.3.2 Environmental Consequences for Cultural Resources at SNI

No known cultural resources are at or near the proposed alternative launch site or the proposed flight path for the Proposed Action as described in **Section 2.2.2.1**. Therefore, the Proposed Action is not expected to adversely affect known cultural resources at SNI.

Ground disturbance required for improvements at the proposed alternative launch sites would include up to 450 feet of trenching for utilities, which may impact undiscovered terrestrial archaeological resources. Impacts on undiscovered archaeological resources could be significant without mitigation. Tribal monitors would be required during all ground-disturbing activities. Additionally, the Rock Crusher launch site may contain historical features with Cold War era significance that may be affected by the Proposed Action. The Commander, Navy Installations Command and Navy Region Southwest would consult with Indian tribes, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation, if required, to determine a finding of effect and develop measures to avoid, minimize, or mitigate any adverse effects from the Proposed Action in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Project personnel would be briefed during the routine construction briefings and before activities commence at each location regarding the significance of cultural resources and the penalties associated with their disturbance or collection. If, during the course of activities associated with the Proposed Action, prehistoric, historic, or traditional cultural materials, particularly human remains, are discovered, the protocols in **Appendix C**, **Section C.1.2** regarding unanticipated discoveries are to be followed. These protocols are part of standard operating procedures for Inadvertent Discovery of Cultural Resources, NHPA, and Native American Graves Protection

and Repatriation Act compliance procedures, described in the SNI ICRMP (Gold et al. 2019), were developed to address and minimize potential effects to cultural resources on SNI.

3.1.4 Geology and Soils at SNI

3.1.4.1 Affected Environment for Geology and Soils at SNI

The best available information regarding the affected environment for geology and soil resources at SNI can be found in Section 3.1.2 of the DARPA Launch Challenge EA/EOA (DARPA 2020) which is incorporated here by reference. This section describes the existing resource conditions at the proposed alternative launch sites. Definitions related to geology and soil resources and the regulatory environment can be found in **Appendix B**, **Section B.5**.

SNI is in the Southern Channel Islands off southern California and is part of an emergent portion of the northwest-trending Santa Rosa-Cortez Ridge in the California Continental Borderlands geomorphic province (NBVC 2015). Eocene marine terraces composed of sedimentary strata are the most prominent geological features (NBVC 2015). SNI topography is dominated by a broad terrace or mesa with no distinctive peaks (NBVC 2015).

The central and northeastern parts of SNI are covered by marine terrace deposits, and the western end of the island is covered by deep (up to 75 feet thick) dune sand deposits composed of wind-transported medium grain sand (NBVC 2015). The marine terrace deposits are composed of unconsolidated clayey, silty sands. The rest of SNI is covered with sandy loams and sandy beaches (NBVC 2015). Soils are highly vulnerable to wind erosion and moderately prone to water erosion, with seasonal rainfall and steady northwest winds driving the loss of surface particles into nearshore waters, particularly along the island's steep southern edge (NBVC 2015).

3.1.4.2 Environmental Consequences for Geology and Soils at SNI

The proposed action at SNI would have short-term minor impacts, if any, on geology and soils at SNI. Proposed pad modification at SN-A (**Figure 5**) would occur in previously disturbed areas and may require ground disturbance within an area less than 0.3 acre. Up to 450 feet of trenching may occur to modify existing utilities. Appropriate coordination, investigation, and mitigation would occur or be implemented prior to disturbance. Any project that may disturb soil must go through a screening and approval process through the NBVC Site Approval and Project Review Board. Best management practices (see **Appendix C**) will be implemented to minimize impacts to soil (NBVC 2015).

The concrete pad at SN-A (**Figure 5**) would protect the native soil from damage due to the force of the launch (Navy 2022). During launch, rocket propellants emit a variety of combustion products into the air (see **Section 3.1.1.2**). Some residual amounts can be deposited on the ground surface around the launch location (Navy 2022). Based on soil analysis at long-term launch sites at SNI, deposition of launch combustion products does not significantly change the soil quality around launch sites (Navy 2022). The 2022 PMSR EIS estimated that a 10-year accumulation of launch combustion product levels in soils near launch sites would be substantially below federal soil quality guidelines. Additionally, the estimated concentrations of combustion products would be less than background soil concentrations of these substances (Navy 2022). The Proposed Action would consist of up to six flight test launches per year conducted between the years 2022 and 2032. Since SNI is one of several potential land-based launch locations for JFC flight test launches, Proposed Action launches are likely to be infrequent at SNI. Proposed Action launches may result in a small quantity of deposited fuel

combustion products accumulating at the site over time, however, this will result in a less than significant impact on soil quality (Navy 2022).

In the unlikely event of a launch failure using the BELS, the AUR or vehicle debris could fall on land. If this occurs, post-launch standard operating procedures will be applied including recovery and disposal of test debris and cleanup of accidental fuel spills (**Appendix C**).

3.1.5 Hazardous Materials and Waste Management at SNI

3.1.5.1 Affected Environment for Hazardous Materials and Waste Management at SNI

For a definition of hazardous materials and waste, as well as a description of the management and regulatory setting at SNI, refer to **Appendix B, Section B.6**.

SNI, one of three operating facilities within NBVC, serves as a remote outpost for missile testing and launches as part of PMSR (Navy 2025a). Operations on SNI involve the use, storage, and generation of hazardous materials and wastes associated with aircraft, vehicle maintenance, and ordnance activities. (Navy 2022, Navy 2014) Hazardous materials are ordered through the NBVC Point Mugu Hazardous Materials Minimization Center and transported to the island by airplane or barge. Fuel products (e.g., jet fuel, unleaded gasoline, aviation gasoline, diesel) make up the largest quantity of hazardous materials present on base and transported to SNI. NBVC Point Mugu is classified as a Resource Conservation and Recovery Act (RCRA) Large Quantity Generator of hazardous waste (EPA Handler IDs: CA7170090206 [SNI] and CA9170027271 [Point Mugu]). (USEPA 2025a) In 2023, NBVC Point Mugu at SNI generated 2.2 tons of hazardous waste that was shipped off island including benzene, methyl ethyl ketone, spent nonhalogenated solvents, ignitable waste, and corrosive waste.

Hazardous wastes on SNI are stored at satellite hazardous waste storage areas and then transported to the less-than-90-day accumulation area on the island. From the accumulation area, the wastes are shipped via barge to Port Hueneme, California and then transported to an approved treatment, storage, and disposal facility (Navy 2014). No on-island disposal occurs, and practices emphasize compliance to prevent environmental releases.

3.1.5.2 Environmental Consequences for Hazardous Materials and Waste Management at SNI

Under the Proposed Action for JFC flight tests conducted at SNI, no significant impacts on hazardous materials and waste management are expected.

All launch vehicle and payload characteristics would remain as described in previous program environmental documents and summarized in **Table 2**. The modification and construction of the launch pads on the western end of SNI, would have no impact on the management of hazardous materials and wastes at SNI and PMSR. All hazardous materials and wastes would be properly managed in accordance with federal, state, local, and DoD regulations. No unmitigable human or environmental health risks are anticipated from launch pad modification or construction, test preparation, support, and operations. Any accidental spills from support equipment operations would be contained and cleaned up in accordance with the SNI Spill Prevention, Control, and Countermeasure (SPCC) Plan (Navy 2022). The use of lead-acid, lithium, or other batteries for portable sensor and recording equipment would be temporary. Additionally, vessel operations would not involve intentional discharges of fuel or other wastes that could harm marine life.

The Proposed Action would consist of up to six flight test launches per year conducted between the years 2022 and 2032. Under the Proposed Action, SNI is one of eight potential land-based launch locations identified in **Table 3**, so JFC flight test launches are anticipated to be potentially infrequent at this location. Should a launch abnormality occur at SNI, any debris and hazardous materials would be properly handled and disposed of according to the policies and procedures outlined in **Appendix B, Section B.6.2.1**.

3.1.6 Health and Safety at SNI

3.1.6.1 Affected Environment for Health and Safety at SNI

For a definition of health and safety, as well as a description of the regulatory setting at SNI, refer to **Appendix B, Section B.7**.

The waters surrounding PMSR are open to the public, making public access and proximity within these waters a primary safety consideration. However, public access to SNI is strictly controlled, with access granted only for military-related activities or to pre-approved non-military users, primarily for scientific purposes. (Navy 2025a) Further, at SNI, restricted airspace and surface danger zones extend to 3 nm offshore of the island when the area is active, preventing unauthorized access.

The Naval Air Warfare Center Weapons Division (NAWCWD) manages the Special Use Airspace, including Warning Areas and restricted airspace, associated with PMSR. Three surface restricted water areas surround SNI, where NAWCWD has authority to control access by individuals, aircraft, and ships. PMSR employs an extensive surveillance system to implement real-time safety clearance procedures before operations on SNI. This system includes land-, sea-, and air-based radar, supplemented by aircraft surveillance, to ensure the public remains clear of designated operational areas where hazardous conditions may exist. (Navy 2022)

When PMSR is used for military testing or personnel training, the Navy issues a NOTAM to notify commercial, civilian, and other military aviation. The NOTAM provides information to the Federal Aviation Administration and its air traffic control agencies to reroute air traffic around active Warning Areas and restricted airspace. As a NOTAM does not prevent uncontrolled air traffic from entering a Warning Area, non-participating aircraft are identified by radar and contacted via radio. If an aircraft remains in a clearance area after being requested to leave, the Navy will delay or cancel the test.

Similar procedures notify commercial shipping and recreational vessels of potentially hazardous activities within PMSR. These notifications are issued through NTMs and daily marine radio broadcasts. PMSR has established protocols to ensure non-participating surface vessels are not exposed to undue risk. Surveillance aircraft survey designated clearance areas to confirm the absence of surface vessels. If vessels are present, they are warned of impending hazardous activities and requested to leave via marine radio or, if not radio-equipped, loudspeakers. If a vessel remains in the clearance area, the Navy will delay or cancel the test. No test is initiated if a non-participating vessel is present in the clearance area. (Navy 2022)

All missions at PMSR involving missile launches or reentry vehicles, including those at SNI, must follow specific procedures based on regulations, directives, and flight safety plans. All program operations require approval from the PMSR Range Safety Office, which reviews proposed programs, safety analyses, standard operating procedures, mission objectives, support requirements, and schedules. Flight safety plans assess risks to residents and property near the

flight path, calculate trajectory and debris areas, and specify range clearance and notification procedures. Debris hazard risk assessments at PMSR adhere to Range Commanders Council (RCC) Standard 321-23, Common Risk Criteria Standards for National Test Ranges (RCC 2023).

3.1.6.2 Environmental Consequences for Health and Safety at SNI

Under the Proposed Action, no significant impacts on health and safety would be anticipated as the result of modification or construction of the launch pads or for flight test launch and support activities at SNI. As described in **Section 3.1.6.1**, SNI is part of PMSR and public access to the island is strictly controlled. The flight tests at SNI would be similar to prior activities on the island with similar levels of risk to personnel. There would be no increase of risk to the public. As described in **Sections 2.1.1** and **3.1.6.1**, NTMs and NOTAMs would be issued prior to flight tests to warn mariners and pilots.

Through the application of DoD and Navy health and safety requirements identified in **Appendix B, Section B.7.2.1**, missile test programs are conducted with minimal risk to military personnel, contractors, and the public. For JFC flight tests, range safety representatives at the PMSR Range Safety Office would closely coordinate development of risk analyses based on the trajectories, probability for system failure, and any population densities near missile flight paths. For nighttime launches, existing permanent launch pad lighting or temporary transportable lighting would be used in accordance with any installation-specific lighting requirements. Should a launch abnormality occur, the flight termination system or command destruct package on the missile or payload would be activated to stop forward thrust and flight. The PMSR Range Safety Office will not allow a flight test to proceed if the calculated risk exceeds the RCC 321-23 criteria, which requires that individuals within the general public not be exposed to a probability of casualty greater than 1 in 1,000,000 for any single mission (RCC 2023).

3.1.7 Water Resources at SNI

3.1.7.1 Affected Environment for Water Resources at SNI

The best available information regarding the affected environment for water resources at SNI can be found in Section 3.2 of the PMSR EIS/OEIS (Navy 2022) and Section 3.1.1 of the DARPA Launch Challenge EA/EOA (DARPA 2020) which are incorporated here by reference. This section describes the existing resource conditions at the proposed alternative launch sites. Definitions related to water resources and the regulatory environment can be found in **Appendix B**, **Section B.8**.

SNI is the most remote of the Channel Islands and is part of the Los Angeles Regional Water Quality Control Board Region 4 (CSWRCB 2024). The Channel Islands have a Mediterranean-type climate, characterized by cool wet winters and hot dry summers. On average, 95% of the rainfall in the Channel Islands occurs between November and April. The dry season generally extends from May–October. Historical rainfall averages are approximately 14 inches per year (National Park Service 2016).

Domestic water for SNI is obtained from a combination of sources including four wells, three springs, a desalination (reverse osmosis) plant, and imported water barged to the island which is used only in the case of emergency (Navy 2022).

Surface Water

The island's topography is shaped by the movement of surface water flowing toward the ocean. A drainage divide runs along the crest of the island's southern escarpment, which trends east to west. In the southern region, ephemeral streams channel surface water through steep, V-shaped canyons that follow straight paths with minimal branching before reaching the ocean. On the northern side, runoff initially travels through steep-walled gullies in the upland areas. As it nears the coast, the water disperses across flat marine terraces and continues through shallow, poorly defined channels within the sand dunes. (DARPA 2020)

SNI does not contain any perennial bodies of water. The only year-round stream, Tule Creek, is located in the northern part of the island and flows northeast from the island's highest elevation to a sand dune area along the coast. Tule Creek is sustained primarily by natural springs that typically flow throughout the year, except during drought conditions. These springs include Zitnic Springs, situated in the groundwater recharge zone near Redeye Beach, and Windmill Springs, located approximately 1.3 miles southeast of Redeye Beach near the Alpha Launch Complex. (DARPA 2020)

A wetland on the northeast side of the airfield supports various plant species; small wetlands are also present at Sand Spit, Twin Rivers, and Tule Creek. Although surface water on SNI is not used as a potable water supply source, it does recharge the groundwater supply. (DARPA 2020)

Groundwater

The consolidated marine sediments that form SNI have a limited capacity to store groundwater. The island's western end, characterized by extensive deposits of windblown sand, is the only area where conditions are favorable for groundwater accumulation. In this region, perched aquifers are found within the upper 3 feet of weathered surficial deposits. Groundwater in this area generally flows northwest toward the island's primary water-bearing basins: Zitnic, Upper Tule Creek, and Vizcaino. In contrast, the southern beaches and terraces lack freshwater springs and seeps. Water that infiltrates these terraces typically mixes with brackish groundwater, resulting in saline conditions. (DARPA 2020)

Wells, Springs, and Catchments

Numerous freshwater wells and catchments have been installed at locations across the island and provide the major portion of freshwater for SNI. There are various types of water catchments on the island designed to capture underground water seepage and spring water. (DARPA 2020)

SNI has septic and holding tanks which are used at outlying buildings. Septic/holding tank locations are necessary due to the size of the island and the remote locations of some of the buildings. The septic and holding tanks are inspected on a quarterly basis and are pumped as required during inspections. The septic and holding tanks do not appear to pose a significant risk of contaminating the watershed areas. (DARPA 2020)

Nearshore Water Quality

The proposed alternative launch sites on the western end of SNI are at least 400 feet from the shoreline of the island. Nearshore waters that receive run-off discharge from the launch areas into the ocean are the most vulnerable to contamination or decreased water quality due to the Proposed Action. Historically, hexavalent chromium, pesticides, and chlorine have been found along the shore at Coast Guard Beach, Daytona Beach, Blue Whale Cove, and Tranquility Beach. These

locations are representative of areas that receive storm water discharges associated with Navy operation activities, such as residential areas, water desalination, and rocket launch operations (Navy 2022). SNI's distance from both the mainland and oil and gas developments in the Southern California Bight, combined with the large diluting volume of the ocean and the shelves and basins near the mainland where many pollutants settle, ensures high water quality near the island (Navy 2022).

3.1.7.2 Environmental Consequences for Water Resources at SNI

The Proposed Action at SNI would have only short-term, minor impacts, if any, on water resources at the alternative launch sites. As described in the PMSR EIS/OEIS (Navy 2022), previous, ongoing, and proposed future actions in support of training and research, development, testing, acquisition, and evaluation are not expected to result in violations of water quality standards and criteria because pollutants are released in relatively small quantities and are widely dispersed in the environment.

The primary potential water quality impacts associated with the Proposed Action would be from the release of hazardous constituents from flight test launches. The large volume of water in the Southern California Bight, combined with the constant circulation, would quickly dilute any leached hazardous substances (Navy 2022). The use of missiles, airborne and sea surface targets, and flares was analyzed in the 2022 PMSR EIS/OEIS and impacts were found to be far from a significant threshold (Navy 2022). Proposed activities at SNI would be within the envelope of ongoing test and support activities at SNI previously evaluated. Therefore, for reasons described above, implementation of the Proposed Action would not have a significant impact to water quality.

3.1.8 Cumulative Effects at SNI

Past present and reasonably foreseeable actions at SNI have recently been documented in a number of NEPA compliance documents which are incorporated here by reference as summarized in **Table 4**.

Analyses in **Section 3.1** do not reveal any potentially significant environmental impacts of the Proposed Action when considered alone. While some of the past, present, and future actions considered (see **Section 3.0**) have had or would have significant environmental impacts (see Navy 2025a and Navy 2022 for detailed summaries of cumulative environmental impacts at SNI), no substantial interactive or additive factors have been identified which would indicate that the Proposed Action at SNI would meaningfully contribute to cumulative effects when considered with these actions. Overall, the Proposed Action at SNI when considered with other actions would not result in significant cumulative effects.

While Proposed Action emissions would have negligible to minor impacts on air quality at SNI, these emissions would contribute incrementally to cumulative effects to air quality but not in a measurable or detectable way. As concluded in the HCTT EIS/OEIS (Navy 2025a), the additive effects from combined emissions, would be minor, localized, intermittent, and unlikely to contribute to future degradation of the atmosphere in a way that would harm ecosystems or nearshore communities.

The combined history of land use on SNI has had cumulative impacts on biological resources; however, current management of natural resources and implementation of protective measures at SNI mitigate the risk of future cumulative impacts from military training and testing there. While

non-military activities in the region have had cumulative adverse effects on plant and wildlife populations due to a variety of factors (Navy 2025a), the incremental contribution of the Proposed Action to these cumulative effects on biological resources would be unmeasurable.

Military use and environmental conditions have had cumulative effects on cultural resources at SNI. Particularly, any prehistoric archaeological sites on or near the surface would have been impacted when the Rock Crusher Site was first developed. Additional impacts resulting from the Proposed Action are expected to be minor as ground disturbance is limited, the visual setting of surrounding resources has already been altered, and further changes to the setting from the Proposed Action would be consistent with existing infrastructure. The Section 106 process, the regulations set forth at 36 Code of Federal Regulations (CFR) § 800, and the Navy's cultural resource management program at SNI assures that potentially significant cultural resources are protected and are not subject to incremental degradation. Further, mitigation measures per 36 CFR § 800.6 and the SNI ICRMP provide procedures for long-term protection and management of cultural resources. Therefore, the Proposed Action, in conjunction with other past, present, and foreseeable activities, would not result in cumulative impacts on cultural resources.

Proposed Action effects on water quality, soils, and hazardous materials would be negligible with primary potential effects being from launch emissions. Cumulative effects to water quality from past and present activities are primarily found in more heavily used nearshore areas and bays; however, there is some concern about persistent metal and plastic materials from military expended materials accumulating in the offshore marine environment (Navy 2025a). The incremental contribution of the Proposed Action to these cumulative effects on water and sediment quality would be unmeasurable and negligible.

3.2 Wake Island

General conditions at Wake Island are described in **Section 2.2.2.1**. This Supplemental EA/OEA focuses on the potential for environmental impacts of the Proposed Action at Wake Island and in nearshore, territorial waters (within 12 nm of the territorial baseline).

3.2.1 Air Quality at Wake Island

3.2.1.1 Affected Environment for Air Quality at Wake Island

The ROI for the air quality analysis at Wake Island includes the entire island, as this is where missile flight tests, pre- and post-flight test activities, and other flight test-related support activities would occur.

Limited air quality monitoring data are available for Wake Island; however, there are no evident air pollution problems, and it is generally understood that air pollution is negligible due to strong trade winds quickly dispersing air emissions that occur on the atoll. In addition, there are no other islands within several hundred miles of Wake Atoll that could be affected by air emissions that occur within the localized air basin. Sources of air emissions on the atoll include diesel prime power generators, diesel emergency backup generators, motor vehicles used by personnel stationed on the atoll, aircraft operations, incinerators, fuel storage, and launch operations (DAF 2024b). Although the CAA does not apply, the collective emissions sources at Wake Island do not meet the threshold for Title V permitting under the CAA, and there is no evidence that air quality standards have been exceeded.

Wake Island has a tropical marine climate, primarily influenced by easterly trade winds that prevail throughout most of the year. These trade winds promote steady atmospheric circulation and contribute to relatively stable weather conditions, with minimal seasonal temperature variation. Between 1991 and 2020, Wake Island had an average temperature of 81.2°F, which ranged from 83.7°F in the warmest month (August) and 78.3°F in the coldest month (February). Over the same period, the average annual precipitation was 34.6 inches. The wettest month of the year was September with an average precipitation of 5.9 inches (NOAA 2021a). Annual rainfall is considered moderate, with a slightly wetter season occurring from July through October. Although the island is east of the primary typhoon development zone in the Western Pacific, it is occasionally affected by severe weather and tropical storms, particularly during the late summer and early fall months.

3.2.1.2 Environmental Consequences for Air Quality at Wake Island

Effects on air quality were evaluated by comparing the annual net change in emissions of criteria pollutants against the significance threshold of 250 tpy (25 tpy for lead). Emissions from the Proposed Action at Wake Island would be identical to those described for the pre-flight, flight, and post-flight activities at SNI (see **Section 3.1.1.2**). Air emissions from construction of required launch and equipment pads would be consistent with the launch activities at Wake Island and minimal ground disturbance would occur (less than 0.5 acre); therefore, the emissions from pad construction are expected to be negligible.

Under the Proposed Action, up to six launches could occur at Wake Island, resulting in a net increase in air emissions on the atoll. Proposed associated launch activities are shown in **Table 5** and would not exceed significance indicator levels for any criteria pollutant. Because it would be unlikely that six launches would occur at Wake Island in the same year, actual emissions may be lower than what was estimated. Therefore, impacts on air quality from the Proposed Action at Wake Island would be minor.

Consistent wind patterns on the atoll promote horizontal transport and rapid dispersion of emissions over the open ocean. Combined with the absence of major topographic features and minimal landmass, these conditions limit the potential for pollutant accumulation in the immediate area, which reduces the likelihood of air quality issues.

3.2.2 Biological Resources at Wake Island

3.2.2.1 Affected Environment for Biological Resources at Wake Island

The best available information regarding the affected environment for resources at Wake Island can be found in Section 3.1.1 of the U.S. Space Force Space Systems Command Flight Tests EA/OEA (USSF 2022), Section 3.3.1 of the Integrated Flight Tests at Wake Atoll EA (MDA 2015), Section 3.3.2 of the Integrated Flight Tests at USAKA EA (MDA 2012), and the Wake Island Airfield Integrated Natural Resources Management Plan (PRSC 2023) which are incorporated here by reference. Biological resources at Wake Island Airfield (WIA) are managed under the installation's Integrated Natural Resource Management Plan (PRSC 2023). The Wake Island Biosecurity Management Plan (PRSC 2015) details processes and procedures in place to protect Wake Island biological resources from pest species. Primary biological resources of importance or concern in the ROI at Wake Island are nesting migratory birds near the launch pad and support areas and hauled out sea turtles. Definitions related to biological resources and the

regulatory environment can be found in **Appendix B**, **Section B.3**. A list of special-status species in the Wake Island ROI can be found in **Appendix D**, **Table D-3** and **Table D-5**.

Terrestrial Vegetation and Wildlife

Terrestrial vegetation near launch pads at Wake Island and support sites is primarily invasive plants typical of sites with frequent disturbance or harsh environmental conditions. Native vegetation communities on Wake Atoll were significantly disturbed by human activity and development during and after WWII and by periodic natural disturbance (MDA 2015, PRSC 2023). Launch sites have vegetation associated with mowed/maintained areas immediately surrounding paved launch sites with a mosaic of scrub, sparse ironwood forest, and disturbed areas in other portions of Peacock Point (MDA 2015). No special status plant species are known to occur in the ROI at Wake Island.

Other than birds, the native terrestrial fauna at Wake Atoll is relatively limited and includes insects, several species of land crabs, and at least one species of snail (MDA 2015). Geckos can be found on all three islands as well as introduced Polynesian rats (MDA 2015).

Birds. More than 30 species of migratory and nesting birds inhabit Wake Island; most are protected under the MBTA (USSF 2022, MDA 2015). The bird species with the highest potential to be affected by proposed activities are species that nest on or near Peacock Point, which include wedge-tailed shearwaters, white-tailed tropicbirds, white terns, black-footed albatross, Laysan albatross, and waterfowl species (see Figure 3-3 of MDA 2015).

Sea Turtles. While sea turtles spend the majority of their time in marine habitats, green sea turtles are known to haul out on Wake Atoll beaches (USSF 2022). The Central West Pacific DPS of green sea turtles is listed as endangered under the ESA.

Marine Vegetation and Wildlife

Marine habitats in the ROI at Wake Atoll include the nearshore shallow lagoons and coral reefs as well as deeper offshore waters under the vehicle flight corridor. Reef communities at Wake Atoll provide habitat for more than 300 species of fish, 100 species of corals, 39 other macroinvertebrate species, and 19 species of macroalgae (USSF 2022, MDA 2015).

Invertebrates. Of the hundreds of species of coral species, three ESA-listed coral species are known to occur along the southern portion of Wake Atoll: *Acropora globiceps*, *Acropora retusa*, and *Acropora speciosa* (USSF 2022, PRSC 2019).

Birds. As described for terrestrial resources, several species of seabirds occur at Wake Island and would also use marine habitats of the ROI. The only ESA listed bird known to occur in the Wake Island ROI is the Newell's shearwater, which is listed as a threatened species. Newell's shearwaters do not nest at Wake Atoll or otherwise occur in terrestrial habitat but are only found at sea where they feed and rest.

Sea Turtles. Two species of sea turtles, both listed as endangered under the ESA, have the potential to occur in the nearshore waters of Wake Atoll: green and hawksbill sea turtles. While green sea turtles are frequently sighted in nearshore waters of Wake Atoll (MDA 2015, PRSC 2019), hawksbill sea turtles have only rarely been documented there (USSF 2022). Critical habitat has been proposed for this Central West Pacific DPS of green turtles (88 FR 46572 [19 July 2023]); however, the waters around Wake Island were excluded from the critical habitat designation because they are of low conservation value for the species.

Marine Mammals. Marine mammals that occur in waters offshore of Wake Atoll include several species of cetaceans protected under the MMPA (MDA 2015, PRSC 2019). Of these, the most likely to occur in nearshore waters are dolphin species such as bottlenose and spinner dolphins. ESA-endangered Hawaiian monk seals have been sighted at Wake Island in the past; however, the species is unlikely to be present and has not been observed there for decades (MDA 2015). Four whale species listed as endangered under the ESA (blue, fin, and sperm whales, and the Western North Pacific DPS of humpback whale) may be present intermittently near Wake Atoll but are expected to spend most of their time in deeper waters of the BOA.

Environmentally Sensitive Habitats and Protected Areas

Essential Fish Habitat. EFH has been designated in marine waters around Wake Atoll from the shoreline to 200 nm offshore by the Western Pacific Regional Fishery Management Council (WPRFMC 2025). The WPRFMC developed essential fish habitat designations for management unit species including bottomfish and seamount groundfish, crustaceans, precious corals, pelagic species, and coral reef ecosystem species (WPRFMC 2025).

Marine Protected Areas. Pacific Islands Heritage Marine National Monument is approximately 495,189 square miles of U.S. exclusive economic zone waters in area around seven islands and atolls including Wake Atoll (NOAA 2025b) The Monument includes hotspots of species diversity and abundance (NOAA 2025b) including special status clams, oysters, crabs, fish, sharks, dolphin, seabird, and shorebird species. The Monument designation includes prohibitions on commercial and non-commercial fishing without a permit (50 CFR § 665.933).

The Wake Atoll National Wildlife Refuge includes 774 square miles of submerged lands and waters surrounding Wake Atoll within U.S. territorial seas (out to 12 nm from the territorial sea baseline). The refuge provides important seabird and migratory shorebird habitat, as well as coral reefs that support large populations of fishes (USFWS 2025a).

3.2.2.2 Environmental Consequences for Biological Resources at Wake Island

The Proposed Action has the potential to impact biological resources in the Wake Island ROI through the same stressors described in **Section 3.1.2.2** and summarized in **Table D-6**. Based on the presence of existing launch pads and lack of important or sensitive biological resources in proposed pad construction areas, no impacts to biological resources would be expected if pad modifications needed to be made at launch sites. Because Proposed Action activities at Wake Island are occurring entirely within the existing U.S. Air Force installation at Wake Island, proposed operations would comply with applicable standard operating procedures and mitigation measures established for routine launch activities at Wake including the Wake Island Biosecurity Management Plan (PRSC 2015), as summarized in **Appendix C**.

Except for proposed pad construction, the potential impacts of the Proposed Action on biological resources would be similar to other flight test activities evaluated at Wake Atoll (i.e., USSF 2022, MDA 2015, MDA 2012) and similar to impacts at other JFC launch locations (Navy and Army 2022, Navy and Army 2024).

Consequences for Terrestrial Vegetation and Wildlife

There would be no to negligible impacts to terrestrial vegetation at Wake Island. Plants near the launch pads may be temporarily affected by heat and emissions from vehicle launch. However, no long-term effects on vegetation would be expected (USSF 2022, Navy and Army 2024).

Vegetation would be expected to return to normal within a year of the launch and there would be no adverse impacts to special-status, rare, or otherwise important vegetation.

Impacts on terrestrial wildlife would be minor and short term. Primary concerns at Wake Island include disturbance of nesting seabirds and shorebirds or hauled out sea turtles. If a flight test occurs during the nesting season, seabirds or shorebirds might be disturbed by human activity, equipment operation, and noise from construction and vehicle launch. Based on expected noise levels and location of proposed activities relative to bird nesting areas, the Proposed Action potential effects would be short-term and would have minor impacts on MBTA protected bird species. Under normal operations, the Proposed Action would not result in any direct contact from falling components at Wake Island. Even in the event of an ignition failure during a BELS launch in which the AUR or debris fell onto Wake Island (**Figure 6**), direct contact and hazardous chemicals from the vehicle are unlikely to contact bird nests and there would be no effects on sea turtles. The Proposed Action is not likely to result in a significant adverse effect on the sustainability of any migratory bird population at Wake Atoll and would not be expected to reduce the population size or distribution of sensitive biological resources.

Consequences for Marine Vegetation and Wildlife

No impacts to nearshore vegetation and wildlife are expected due to proposed activities at Wake Island. Under normal operations, the Proposed Action would not result in any direct contact from falling components. Even in the unlikely event of a launch incident in which the vehicle or vehicle fragments fell onto Wake Island, it is not expected that debris would fall into nearshore waters. The Proposed Action would require use of vessels to transport equipment to Wake. Any vessels transporting equipment to Wake would use established vessel routes, harbors, and docks used for normal operations at Wake Atoll and would follow standard operating procedures to avoid striking marine mammals or sea turtles (see **Appendix C**).

Some cetacean, sea turtle, and seabird species use nearshore waters; however, these animals would not be affected by vehicle overflight during a flight test or by the limited routine vessel traffic associated with the Proposed Action. The Proposed Action would have no to negligible effects on marine wildlife.

Consequences for Environmentally Sensitive Habitats and Protected Areas

All environmentally sensitive habitats in the Wake Island ROI are in marine areas. Since no test components, debris, or hazardous materials are expected to enter marine environments, there would be no impact of the Proposed Action on environmentally sensitive habitats.

Essential Fish Habitat. Only vessel traffic might occur within EFH. Based on the limited scope and the type of activities which might occur in EFH, the Proposed Action would not reduce the quality and/or quantity of EFH. No impacts to EFH are expected as a result of the Action.

Marine Protected Areas. The Proposed Action would be implemented in accordance with ongoing Air Force operations and Navy training and testing activities in the vicinity of monument and refuge resources. There would be no to negligible impacts to the Pacific Islands Heritage Marine National Monument or Wake Atoll National Wildlife Refuge.

3.2.3 Cultural Resources at Wake Island

3.2.3.1 Affected Environment for Cultural Resources at Wake Island

The ROI for potential impacts to cultural resources at Wake Island includes work areas associated with JFC flight test launch operations, including payload processing, transport, and launch. Regulations regarding the treatment of cultural resources at Wake Island are summarized in **Appendix B**, **Section B.4.2** and more detailed information on the regulatory framework and affected environment for cultural resources at Wake Island can be found in the Wake Island ICRMP (PRSC 2020). Relevant information regarding cultural resources at Wake Island from the ICRMP is incorporated here by reference with issues of particular concern or importance relative to the Proposed Action summarized in this section.

Historical and Ethnohistorical Background

Wake Island likely never contained prehistoric settlements, and no prehistoric archaeological evidence has been found on the island. The earliest recorded visit by Europeans occurred in 1568 and the island was used by whalers and Japanese feather hunters intermittently until the early twentieth century. The United States surveyed the atoll in 1841 and took formal possession in 1899. In 1941, the Navy began construction of an airfield, seaplane base, submarine base, and supporting facilities. At the beginning of WWII the Japanese seized the atoll from the United States. Although unsuccessful, the tenacious defense of the island bolstered the American spirit after the attack at Pearl Harbor.

After the Japanese surrender in 1945, Wake Atoll reverted to the jurisdiction of the Navy and the Army took over operations a year later. The atoll was first used as an Army missile testing location in 1973 in support of the Army's Advanced Ballistic Missile Defense Agency discrimination programs. After an approximately 10-year hiatus, missile testing began again in 1987 for the Strategic Defense Initiative known as "Star Wars". USASMDC selected Wake Island as a test location for Project Starbird anti-missile defenses, setting up facilities south of the runway near Peacock Point. In 1994, the atoll became known as the Wake Island Launch Center and was part of the Army's Kwajalein Atoll command, home to RTR. In January 2000, Wake Island operations were scaled back and in 2010 management responsibility of WIA was transferred to the 611 Air Support Group, later renamed Pacific Air Forces Regional Support Center.

Previous Investigations and Known Cultural Resources

Wake Island was established as a National Historic Landmark (NHL) in 1985 based on WWII significance, and the first systematic cultural resource investigations of the atoll were undertaken as part of the evaluation process. The boundary of the Wake Island NHL encompasses all American and Japanese structures, earthworks, fortifications, and weapons from the period 1941 to 1945. As an NHL, Wake Island is also listed in the NRHP.

A systematic survey of Wake Atoll took place in 1989 in preparation for the Starbird Project missile launch facilities and more extensive surveys were conducted in 1999 and 2000 in preparation for the first ICRMP. Since then, more than 20 project-specific investigations have taken place on the atoll, including archaeological monitoring in conjunction with environmental restoration. While many NHL features on Wake Island have been inventoried and recorded, there has been no systematic survey conducted there aside from the investigations conducted at Peacock Point for the development of the Starbird Launch Facilities. Only those features that would have been directly impacted by the missile defense system construction were recorded.

Known cultural resources on the atoll are limited to pre-occupation shipwrecks and features related to trans-Pacific aviation, the WWII Battle of Wake Island, and post-war civilian and military use. Known cultural resources at Wake include 335 features, 119 feature clusters, 2 historic buildings, 6 shipwrecks, and 5 memorials. The shipwrecks have been observed but there is no record that they have been formally recorded. Of the known cultural resources on Wake Island, 10 are within 500 feet of at least one of the proposed launch pad alternatives being considered for the Proposed Action (**Table 6**). The 500-foot buffer is used to identify known cultural resources in the vicinity of the Proposed Action and to indicate what types of unknown or buried cultural resources may be present. The buffer also establishes a baseline for potential visual effects to cultural resources. All 10 resources within the 500-foot buffer are features related to the WWII Japanese occupation and defense of Wake Island. No known TCPs are located in the vicinity of the Proposed Action.

Table 6. Cultural Resources Within 500 Feet of Proposed Activity Locations at Wake Island

Resource	Description	National Historic Landmark (NHL) Status
WK-61	Japanese anti-aircraft fire control center	Contributing feature of the NHL
WK-62	Japanese bunker	Contributing feature of the NHL
WK-63	Japanese gun emplacement	Contributing feature of the NHL
WK-64	Japanese gun emplacement	Contributing feature of the NHL
WK-65	Japanese feature cluster including: 1 gun position, 4 coral masonry structures, trench network, 1 rifle pit, and 1 bunker	Contains a mix of contributing and non-contributing features
WK-68	Japanese feature cluster including: 1 gun emplacement and 1 concrete structure	Contributing feature of the NHL
WK-69	Japanese feature cluster including: 1 coral cobble/wood structure and 2 coral masonry walls	Contributing feature of the NHL
WK-70	Japanese bunker	Contributing feature of the NHL
WK-71	Japanese feature cluster including: 4 bunkers and 1 coral masonry structure	Contains a mix of contributing and non-contributing features
WK-74	Japanese pillbox	Contributing feature of the NHL

3.2.3.2 Environmental Consequences for Cultural Resources at Wake Island

No known cultural resources are within any of the three proposed alternative launch sites associated with the Proposed Action at Wake Island. There are 10 Japanese WWII features within 500 feet of proposed activity locations, as listed in **Table 6**. At least two of these features are adjacent to the BELS launch potential debris extent buffers for alternative launch sites WA-B and WA-C. Based on available information, no physical impacts on known cultural resources resulting from the Proposed Action are anticipated. Any visual effects are expected to be negligible because the setting has already been altered since the period of significance of the NHL and further changes to the setting as a result of the Proposed Action would be consistent with existing infrastructure and use of the launch sites.

The Proposed Action is not expected to affect cultural resources on Wake Island and consultation is not required. While the Proposed Action is not expected to affect cultural resources, additional undiscovered cultural resources may be present in or near the Proposed Action. The likelihood of buried prehistoric or traditional resources is very low because there is no existing evidence of prehistoric resources and the area has been disturbed repeatedly since the early twentieth century. The likelihood of buried historic WWII era resources is moderate as there may be buried archaeological constituents in the vicinity related to the heavy fighting that took place at Peacock Point during WWII.

Project personnel would be briefed during the routine construction briefings and before activities commence at each location regarding the significance of cultural resources and the penalties associated with their disturbance or collection. If, during the course of activities associated with the Proposed Action, prehistoric, historic, or traditional cultural materials, particularly human remains, are discovered, the standard operating procedures established in Section 7.4 of the Wake Island ICRMP (PRSC 2020) must be followed as summarized in **Appendix C**, **Section C.2.2**.

3.2.4 Geology and Soils at Wake Island

3.2.4.1 Affected Environment for Geology and Soils at Wake Island

The best available information regarding the affected environment for geology and soil resources at Wake Island can be found in Section 3.5 of the Integrated Flight Tests at Wake Atoll EA (MDA 2015) which is incorporated here by reference. This section describes the existing resource conditions at the proposed alternative launch sites. Definitions related to geology and soil resources and the regulatory environment can be found in **Appendix B**, **Section B.5**.

Wake is typical of mid-Pacific Ocean atolls formed when a volcano rises above the ocean surface and then subsides back below the surface due to deflation of the underlying magma chamber (MDA 2015). The island is surrounded by coral reefs that form a ring-shaped structure enclosing a shallow central lagoon. The ground surface is composed of disintegrated coral interspersed with coral cobble. The soil profile consists of interspersed sand, shells, coral, and limestone. The substrate is coarse grained and almost completely composed of calcium carbonate. The soils are of low fertility and lack many of the nutrients required to support most plant species (PRSC 2023a).

As of May 2015, the Environmental Restoration Program included 11 remedial investigation sites (PRSC 2023a). Brice Environmental removed polychlorinated biphenyls (PCB) and dioxin contaminated soil from near the launch locations (PRSC 2023a, Brice Environmental 2025). The contaminated soil was transported to an offsite facility. The PCB contamination was remediated; however, the dioxin contamination remains and requires further investigation. Land use controls at the affected site consist of warning signage indicating the presence of contamination (PRSC 2023b).

3.2.4.2 Environmental Consequences for Geology and Soils at Wake Island

The Proposed Action at Wake would have short-term minor impacts, if any, on geology and soils. The movement of the launchers and the placement of portable sensors on pre-existing launch sites on Wake are not expected to result in any increase in soil erosion or contamination. These activities would occur in areas typically used for launch and support activities. Standard spill prevention measures would be followed to minimize the potential for soil contamination (see **Appendix C**).

No adverse changes to soil chemistry are predicted to occur as a result of solid rocket motor emission products deposited on the soil. As discussed for SNI (**Section 3.1.4.2**), the primary risk to soils at Wake Island would be from launch emission deposition in soils; however, soil analyses conducted at long-term launch sites on SNI indicate that deposition of launch combustion byproducts does not significantly alter the surrounding soil quality. (Navy 2022)

3.2.5 Hazardous Materials and Waste Management at Wake Island

3.2.5.1 Affected Environment for Hazardous Materials and Waste Management at Wake Island

Refer to **Appendix B, Section B.7** for a definition of hazardous materials and waste, as well as a description of the management and regulatory setting at Wake Island.

Wake Island serves as a critical support facility for trans-Pacific military flights and hosts infrequent missile launches and flight tests. These activities occur within the Wake Island Launch Center and associated infrastructure at WIA. The island's isolation necessitates self-contained storage, handling, and off-island shipment protocols to prevent environmental releases. (MDA 2015)

Current operations, including aircraft maintenance, base support, and periodic flight tests, generate hazardous materials and wastes in quantities that qualify WIA as a RCRA Large Quantity Generator (EPA Handler ID: TTD987866035). (USEPA 2025a) In 2023, 13.2 tons of hazardous waste were shipped off island, including benzene; ignitable, corrosive, and reactive wastes; and metals such as barium, cadmium, chromium, lead, mercury, selenium, and silver.

At Wake Island, the dominant hazardous material by volume was jet fuel, which is delivered by cargo ship and transferred to an on-island storage system with an up to a 10 million gallon storage capacity (MDA 2007, MDA 2012). It is distributed to aircraft fueling areas and the power plant, with no routine waste generation under normal consumption. Other common hazardous materials include other types of fuels, oils, solvents, paints, cleansers, pesticides, batteries, contaminated soils, and building-related materials (DAF 2023, MDA 2012, MDA 2015).

The WIA SPCC Plan provides guidelines and preparation in the event of a spill, and to minimize potential contamination and cleanup effort timelines (DAF 2021). Waste is temporarily stored at several satellite accumulation points, from which all hazardous waste is then moved to a central 90-day accumulation site prior to shipment off-island (DAF 2023; DAF 2024b). Containers, compliant with International Air Transportation Association, Air Force Manual, or International Maritime Dangerous Goods regulations, are used for storage for added security until shipment for treatment or disposal (DAF 2023). Hazardous waste shipments are normally transferred to the Wake supply barge for shipment to Hawaii (MDA 2012).

Wake Island’s military history has resulted in legacy contamination addressed under the DoD Installation Restoration Program and Defense Environmental Restoration Program, with Installation Restoration Program sites identified near the WIA. Further, unexploded ordnance has been discovered in areas around the WIA, but all known munitions were detonated in place or disposed of at a designated site on-island. (DAF 2024b)

3.2.5.2 Environmental Consequences for Hazardous Materials and Waste Management at Wake Island

Under the Proposed Action for JFC flight tests conducted at Wake Island, no significant impacts on hazardous materials and waste management are expected.

All launch vehicle and payload characteristics would remain as described in previous program environmental documents and summarized in **Table 2**. Any necessary construction to modify the existing launch pad on the eastern end of Wake Island, would have no impact on the

management of hazardous materials and wastes at Wake Island. All hazardous materials and wastes would be properly managed in accordance with federal, state, local, and DoD regulations. No unmitigable human or environmental health risks are anticipated from launch pad construction, pre- and post-test preparation, support, and operations. Any accidental spills from support equipment operations would be contained and cleaned up in accordance with the WIA SPCC Plan (DAF 2021).

Under the Proposed Action, Wake Island is one of eight potential land-based launch locations identified in **Table 3** so launches from this site are likely to be infrequent. Should a launch abnormality occur at Wake Island, any debris and hazardous materials would be properly handled and disposed of according to the policies and procedures outlined in **Appendix B, Section B.7.2.2**.

3.2.6 Health and Safety at Wake Island

3.2.6.1 Affected Environment for Health and Safety at Wake Island

For a definition of health and safety, as well as a description of the regulatory setting at Wake Island, refer to **Appendix B, Section B.8**.

Wake Island's isolation necessitates robust safety protocols to protect the small resident population from hazards associated with launch activities. Key hazards at Wake Island stem from aviation, infrastructure maintenance, and launch support, including exposure to hazardous materials, noise from aircraft operations, and physical safety associated with support operations and the use of heavy equipment. Current operations, including aircraft maintenance and periodic flight tests, emphasize risk mitigation through training, emergency planning, and hazard controls. Safety practices include mandatory personnel training in standard operating procedures for propellant handling, protective equipment use, and spill response. (DAF 2021, DAF 2023, MDA 2012, MDA 2015)

The missile range extending from Wake Island to USAKA is under the jurisdiction of RTR. Thus, missile flight operations adhere to the RTR Range Safety Manual and policies, requiring comprehensive flight performance analyses and hazard identification before launches. In catastrophic events, such as natural disasters, hazardous materials spills, or flight test failures, Operations Plan 355-1 (Wake Island Disaster Preparedness Plan) outlines responsibilities for rapid response and recovery. Launch preparations involve clearing ground hazard areas with vehicles and helicopters, establishing road control points, and issuing NOTAMs and NTMs to safeguard air and sea traffic. Personnel are sheltered in reinforced concrete shelters during launches, with hearing protection required by Air Force Instruction (AFI) 48-127 for high-noise areas. (USSF 2022)

Contractors performing construction at WIA are required to maintain compliance with Occupational Safety and Health Administration (OSHA) and Air Force worker safety requirements (DAF 2024b).

3.2.6.2 Environmental Consequences for Health and Safety at Wake Island

Under the Proposed Action, no significant impacts on health and safety would be anticipated as the result of construction of the launch pad or for flight test launch and support activities at Wake Island. As described in **Section 3.2.6.1**, flight tests at Wake Island would be similar to prior activities on the island with similar levels of risk to personnel. There would be no increase in risk

to the public. As described in **Sections 2.1.1** and **3.2.6.1**, NTMs and NOTAMs would be issued prior to flight tests to warn mariners and pilots.

Through the application of RTR and Air Force health and safety requirements identified in **Appendix B, Section B.7.2.2**, missile test programs are conducted with minimal risk to military personnel, contractors, and the public. For JFC flight tests, range safety representatives at the Wake Island Launch Center and RTR would closely coordinate development of risk analyses based upon the trajectories, probability for system failure, and any population densities near missile flight paths. For nighttime launches, existing permanent launch pad lighting or temporary transportable lighting would be used in accordance with any installation-specific lighting requirements. Should a launch abnormality occur, the flight termination system or command destruct package on the missile or payload would be activated to stop forward thrust and flight. The RTR Range Safety will not allow a flight test to proceed if the calculated risk exceeds the RCC 321-23 criteria, which requires that individuals within the general public not be exposed to a probability of casualty greater than 1 in 1,000,000 for any single mission (RCC 2023).

3.2.7 Water Resources at Wake Island

3.2.7.1 Affected Environment for Water Resources at Wake Island

The best available information regarding the affected environment for water resources at Wake Island can be found in Section 3.13 of the Integrated Flight Tests at Wake Atoll EA (MDA 2015) and Section 2.2.4 of the installation's Integrated Natural Resources Management Plan (PRSC 2023a), which are incorporated here by reference. This section describes the existing resource conditions at the proposed alternative launch sites. Definitions related to water resources and the regulatory environment can be found in **Appendix B**, **Section B.8**.

Water resources at Wake Island encompass the entire atoll, which serves as the main source of potable water. The atoll's lands and surrounding waters extend 200 nm into the U.S. Exclusive Economic Zone and are part of the Pacific Islands Heritage Marine National Monument. Additionally, the waters within 12 nm of mean low water are designated as the Wake Atoll National Wildlife Refuge. (MDA 2015)

Wake Atoll receives an average of 35 inches of rainfall annually. However, due to its small land area and highly permeable soils, precipitation either quickly drains into the ocean and lagoon or infiltrates into the ground. The only significant source of potable water is rainwater collected in two 17-acre catchment basins located in the central part of the island, as there is virtually no fresh surface water. (MDA 2015)

Limited fresh groundwater is present on the island. Rainwater that seeps into the soil forms a less dense, floating lens above the underlying saline or brackish groundwater. There are several active and inactive wells at various locations on Wake Island. Currently, four wells provide cooling water at the power plant and there is one active well at the water plant (PRSC 2023a).

3.2.7.2 Environmental Consequences for Water Resources at Wake Island

The Proposed Action at Wake would have short-term minor impacts, if any, on water resources. The primary potential for water pollution associated with the Proposed Action is from combustion of rocket propellants during vehicle launch. No substantial effects on seawater quality due to solid fuel emissions, solid fuel debris, or their residuals in missile debris are expected because these would mostly be consumed during launch and flight. Debris from on-pad

failure could adversely impact water resources. However, implementation of standard operating procedures would reduce the potential for on-pad failure and for residual material being present post-test, and thus the potential risk of impact on water resources.

3.2.8 Cumulative Effects at Wake Island

Past present and reasonably foreseeable actions at Wake Island have recently been documented in a number of NEPA compliance documents which are incorporated here by reference as summarized in **Table 4**.

Analyses in **Section 3.2** do not reveal any potentially significant environmental impacts of the Proposed Action at Wake Island when considered alone. While some of the past, present, and future actions considered (see **Section 3.0**) have the potential for significant environmental impacts when taken together (see DAF 2024a and DAF 2024b for detailed summaries of cumulative environmental impacts at Wake Island), no substantial interactive or additive factors have been identified which would indicate that the Proposed Action at Wake Island would meaningfully contribute to cumulative effects when considered with these actions. Overall, the Proposed Action at Wake Island when considered with other actions would not result in significant cumulative effects.

Similar to SNI, Proposed Action emissions would have negligible to minor impacts on air quality. While these emissions would contribute incrementally to cumulative effects on air quality, it would not be in a measurable or detectable way. WIA installation development projects would lead to increased power plant and vehicle emissions which have the potential to result in cumulative adverse effects on air quality when combined with the Proposed Action; however, the wind patterns on the island would rapidly disperse air pollutants, limiting the potential for accumulation. The Air Force would continue to ensure compliance with applicable air quality laws (DAF 2024a, DAF 2024b). The incremental contribution of the Proposed Action to emissions at Wake Island would result in negligible cumulative air quality impacts.

The history of military use of Wake Island throughout WWII and continuing to the present has had cumulative impacts on biological resources; resulting in increases in invasive species, loss of habitats, and reductions in nesting bird populations. However, most of these effects were from historical disturbance (more than 10 years ago). Current and future projects are unlikely to result in future reductions or degradation in habitats or wildlife populations due to management of natural resources and implementation of protective measures at Wake Atoll which mitigate the risk of future cumulative impacts from military activities there (DAF 2024b). Taken together with current and future actions at Wake Atoll, the incremental contribution of the Proposed Action to cumulative effects on biological resources would be less than significant.

Cultural resources on Wake Atoll are mainly WWII era sites and features. Military use and environmental conditions have had cumulative effects on cultural resources, particularly deteriorating concrete structures. Additional impacts resulting from the Proposed Action are expected to be negligible as ground disturbance is limited, the visual setting of surrounding resources has already been altered, and further changes to the setting from the Proposed Action would be consistent with existing infrastructure. Any development at Wake Atoll would comply with Sections 106 and 110 of the NHPA, the regulations set forth at 36 CFR § 800, procedures in AFI 32-7605, and standard operating procedures in the Wake Island ICRMP. Mitigation measures would aim to reduce and minimize impacts and maximize historic preservation.

Therefore, it is unlikely that significant cumulative impacts on cultural resources would occur due to the Proposed Action in combination with future projects.

Proposed Action effects on water quality, soils, and hazardous materials would be negligible with primary potential effects being from launch emissions. There would likely be cumulative effects to soil and water quality from past, present, and future installation development activities at Wake Atoll (DAF 2024a, DAF 2024b). Similarly, other activities are likely to impact hazardous materials and waste management on this remote Pacific island. The incremental contribution of the Proposed Action to these cumulative effects on water and water quality and on hazardous materials and waste management would be negligible and less than significant.

3.3 Meck Islet, USAKA

General conditions at Meck Islet are described in **Section 2.2.2.1**. This section focuses on the potential for environmental impacts of the Proposed Action at Meck Islet and elsewhere at USAKA, including in nearshore, territorial waters (within 12 nm of the territorial baseline).

3.3.1 Air Quality at Meck Islet

3.3.1.1 Affected Environment for Air Quality at Meck Islet

The ROI for the air quality analysis at Meck Islet includes USAKA and the surrounding territorial waters of the RMI, which extend 12 nm seaward from the low-water line. The ROI encompasses the area where missile flight tests, pre- and post-flight test activities, and other flight test-related support activities would occur, and represents the applicable air quality management boundary regulated under the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands* (UES).

USAG-KA maintains a Document of Environmental Protection (DEP; DEP-11-001.0) for air emissions from major, synthetic minor, and industrial boiler stationary sources in accordance with the UES. The includes relevant operating limits and conditions for attainment of the current UES Ambient Air Quality Standards (AAQS) (see **Appendix B, Section B.2.2.3**). Ambient air quality monitoring was conducted near the Meck Islet power plant in 2017, and the results indicated that the UES AAQS for nitrogen dioxide was exceeded on 14 days during the study period, while the NAAQS for nitrogen dioxide was exceeded on 5 days. The only other exceedance during the 2017 monitoring period occurred at the main Kwajalein Power Plant, where the UES AAQS for nitrogen dioxide was exceeded on 1 day. Based on the monitoring results, the DEP requires the Meck and Kwajalein Power Plants to limit the fuel consumption and all power plants on USAKA are required to. maintain “No Loitering” signs where data indicated an exceedance of the UES standards to limit human exposure to air pollutants (USAG-KA 2019). Other sources of air emissions on Meck Islet and covered by the DEP include a municipal solid waste incinerator, which is authorized to combust only non-hazardous solid waste. Regulated sources elsewhere on USAKA include the Roi-Namur Power Plant, municipal solid waste incinerators on Kwajalein and Roi-Namur Islands, emergency generators, fuel storage, painting operations, and abrasive cleaning activities.

In 2018, construction of a 2.3-megawatt solar photovoltaic array was completed on Meck Islet to support electrical distribution for USAG-KA and reduce generator runtimes. The solar array was designed to reduce diesel consumption at the Meck Power Plant by approximately 55 percent (Cohn 2018). A reduction in diesel engine use reduces emissions of criteria pollutants such as nitrogen oxides, sulfur dioxide, particulate matter, and greenhouse gases such as carbon dioxide.

The RMI experiences a tropical marine climate characterized by consistently warm temperatures, high humidity, and prevailing northeasterly trade winds. These trade winds typically range from 9 to 16 miles per hour and are dominant throughout most of the year, providing consistent ventilation and moderating the overall climate. The RMI has two distinct seasons: a wet season between May and November, and a drier season between December and April. Typhoons occasionally occur; however, the atoll is located east of the primary typhoon development zone in the Western Pacific and is considered to be at relatively low risk for direct typhoon impacts.

Overall, the temperature across USAKA stays consistently between the high 70s to mid-80s. Between 1991 and 2020, USAKA had an average temperature of 83.0°F in the warmest months (May and September), with average maximum temperatures reaching 87.4°F, and an average temperature of 82.1°F in the coldest month (January), with average low temperatures that reached 78.3°F. Over the same period, the average annual precipitation was 96.54 inches. The wettest month of the year was October with an average precipitation of 12.26 inches (NOAA 2021b). Ongoing global climate change has contributed to environmental changes in the Pacific Islands including in higher air temperatures, increased atmospheric surface carbon dioxide levels, ocean acidity, sea level rise, more frequent marine heatwaves, coastal flooding, coastal erosion, more frequent heavy precipitation, and extreme heat (IPCC 2021). Trends in the RMI are consistent with global patterns of warming and sea level rise.

3.3.1.2 Environmental Consequences for Air Quality at Meck Islet

Effects on air quality were evaluated by comparing the annual net change in emissions of criteria pollutants against the significance threshold of 250 tpy (25 tpy for lead). Emissions from the Proposed Action at Meck Islet would be identical to those described for the pre-flight, flight, and post-flight activities at SNI (see **Section 3.1.1.2**). As with SNI, estimated annual emissions from proposed launch activities at Meck Islet would not exceed significance indicator levels for any criteria pollutant (see **Table 5**). Because it would be unlikely that six launches would occur at Meck Islet in the same year, actual emissions may be lower than what was estimated. Therefore, impacts on air quality from the Proposed Action at Meck Islet would be minor. No major construction activities are proposed at Meck Islet; however, minor modification of the pad at alternative launch site MK-A to install anchor plates for the Navy BELS or construction of a new launch pad at alternative launch site MK-B may produce air emissions. These air emissions are expected to be consistent with emissions from ongoing activities at USAKA, including minimal ground disturbance (less than 0.5 acre), and would be negligible.

The Proposed Action was evaluated for applicability of National Emission Standards for Hazardous Air Pollutants (NESHAPs) under 40 CFR Parts 61 and 63, which apply to specific categories of stationary sources. The Proposed Action involves flight test activities and associated temporary ground support activities and does not include the construction or operation of new permanent stationary sources of air emissions subject to NESHAP regulations. Accordingly, no NESHAPs are applicable to the Proposed Action. The Proposed Action does not include the construction or introduction of any new stationary sources of air emissions; therefore, no amendments or updates to the existing DEP maintained by USAG-KA would be required.

The prevailing northeasterly trade winds at USAKA provide consistent airflow that supports effective horizontal dispersion of emissions over the open ocean. Combined with the atoll's low elevation, minimal landmass, and lack of significant topographic barriers, these conditions reduce the potential for localized pollutant buildup. The region's high humidity and frequent

precipitation, particularly during the wet season, may further contribute to the removal of certain airborne pollutants through wet deposition. In addition, given the limited potential frequency of launches (up to six per year) and the remoteness of the atoll, any impacts to ambient air quality are expected to be negligible.

An analysis of climate change is included to comply with the obligations of the United States under Section 161(a)(2) of the Amended Compact of Free Association between the United States and the Republic of the Marshall Islands (48 U.S.C. § 1921), and pursuant to UES § 2-22. As established by the USEPA's Greenhouse Gas (GHG) Reporting Rule, a NEPA significance indicator of 75,000 tpy was used to determine the climate change impact level. As shown in **Table 7**, the estimated annual GHG emissions would not exceed the significance indicator level of 75,000 tpy. Therefore, GHG emissions from the Proposed Action are considered insignificant on a global scale and would not meaningfully contribute to the potential effects of global climate change.

Global climate change impacts on the RMI, such as higher air temperatures, sea level rise, coastal erosion, and more frequent rainstorms, are unlikely to significantly affect the ability to implement the Proposed Action. The Proposed Action is only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At the time of this analysis, no future climate scenario or potential future climate stressor would have significant effects on any element of the Proposed Action, nor would the Proposed Action meaningfully contribute to the occurrence of such events.

Table 7. Estimated Annual GHGs from Launch Operations

Activity	CO_2e (tons)
Single Launch Event	
Pre-Launch Preparation and Support Activities [1]	408.87
Launch Support Activities [1]	0.02
Post-Launch Activities [1]	23.43
Single JFC AUR Launch [2]	3.34
Total Emissions for Single Flight Test Event	**435.66**
Total Annual Emissions	
Total JFC Emissions for 6 Launch Events	**2,613.96**
Significance Indicator Level (tpy)	**75,000**
Exceeds Significance Indicator?	**No**

Sources: Navy and Army 2024, DAF 2019, Navy 2025b

Notes:

[1] Emissions data for launch activities were derived from the 2024 JFC Supplemental EA/OEA (Navy and Army 2024), which used emissions from a Minuteman III launch as a surrogate. Pre-Launch, Launch Support (non-missile emissions), and Post-Launch Activity emissions were conservatively scaled up by a factor of 3.3 based on the difference in man-months of activity comparing the JFC launch activities to the Minuteman III launch activities (DAF 2019); 200 man-months vs. 60 man-months (200÷60 = 3.3). Only CO_2 data was available; however, CO_2 is the majority of CO_2e emissions. GHG values shown for the launch event represent 1st stage rocket emissions.

[2] Emissions data for JFC AUR launch were derived from the 2025 CPS EA/OEA, which estimated GHG emissions based on propellant type and quantity (Navy 2025b).

Acronyms and Abbreviations: AUR = All Up Round, CO_2 = carbon dioxide, CO_2e = carbon dioxide equivalent, CPS = Conventional Prompt Strike, EA/OEA = environmental assessment / overseas environmental assessment, GHG = greenhouse gas emissions, JFC = Joint Flight Campaign, tpy = tons per year

3.3.2 Biological Resources at Meck Islet

3.3.2.1 Affected Environment for Biological Resources at Meck Islet

The best available information regarding the affected environment for resources at Meck Islet and the ROI at USAKA can be found in Section 3.3.1 of the Integrated Flight Tests at USAKA EA (MDA 2012) and the RTR Mission Flight Test Activities Notice of Proposed Activity (USASMDC 2025a) and Biological Assessment (USASMDC 2025b) which are incorporated here by reference. The RTR Mission Flight Test Activities Document of Environmental Protection (USASMDC 2026) details the standard operating procedures and mitigation measures required from flight testing at USAKA. Relevant standard operating procedures are summarized in **Appendix C**. Primary biological resources of importance or concern in the ROI at Meck Islet are UES and ESA-listed species in nearshore waters and nesting seabirds near the proposed launch pads and support areas. Definitions related to Biological Resources and the regulatory environment can be found in **Appendix B**, **Section B.3**. A list of special-status species in the Meck Islet ROI can be found in **Appendix D**, **Table D-4** and **D-5**.

Terrestrial Biological Resources

Very little native vegetation remains on Meck due to its managed state (MDA 2012). Meck islet has terrestrial significant habitats that may trigger UES coordination procedures as listed in UES Appendix 3-4D including littoral forest, littoral shrub, managed vegetation, and beach habitats (USASMDC 2024). These coordination habitats that provide key nesting sites and cover for bird and sea turtle species (USASMDC 2024) are shown in **Figure 8**. There are no special status plant species in the ROI at Meck Islet.

Birds. At least 19 species of protected migratory and resident seabirds and shorebirds have been observed breeding, roosting, or foraging on Meck Islet (USASMDC 2025a). All of these migratory and resident birds are protected under the MBTA and are UES-coordination species. A breeding colony of black-naped terns is located on the eastern side of the helipad at Meck Islet (**Figure 8**) and as of 2010, there was signage demarcating the nesting area (NMFS and USFWS 2012). The only other documented evidence of bird nesting includes probable (but unconfirmed) white tern nesting in the small patches of littoral forest on the islet (NMFS and USFWS 2012).

Sea Turtles. Suitable sea turtle haul out habitat exists in beach habitats at Meck Islet (**Figure 8**). Green sea turtles are the most likely species to occur in nearshore waters and haul out on USAKA beaches; however, hawksbill turtles also occur in nearshore waters of USAKA. Green turtles at USAKA belong to the ESA-endangered Central West Pacific DPS.

Marine Biological Resources

Shallow Nearshore Waters. The shallow nearshore waters of Meck Islet have marine significant habitats that may trigger UES coordination procedures as listed in UES Appendix 3-4D (USASMDC 2024). Marine UES coordination habitats include any marine habitats used by UES consultation and coordination species, as well as those important for coastal fisheries, reef development, and coastal buffering (USASMDC 2024). These marine habitats at Meck Islet include the intertidal zone, reef flats, reef crests, reef slopes, patch reefs, spurs and grooves, seagrass meadows, and consolidated bottom (USASMDC 2024) as shown in **Figure 8**.

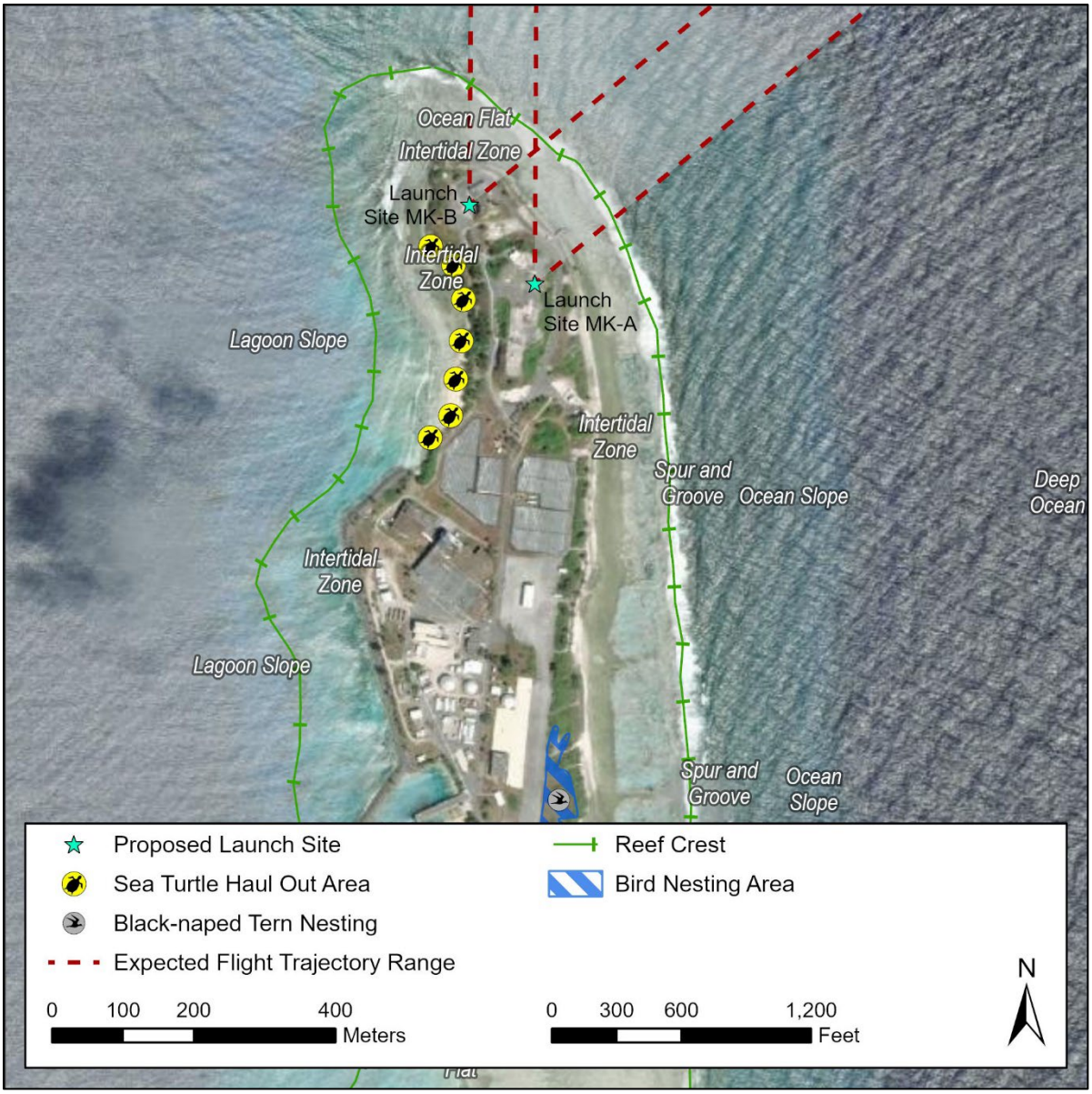


Figure 8. Biological Resources in the ROI at Meck Islet, Kwajalein Atoll

The shallow and nearshore marine habitats at Meck Islet provide habitat for diverse reef communities including hundreds of species of micro- and macroalgae, coral, other macroinvertebrates, fish, and sea turtles (NMFS and USFWS 2021). The areas offshore of launch and support sites include several coral, mollusk, and fish species listed as consultation and coordination species under the UES (see **Table D-4** and USASMDC 2025a and USASMDC 2025b for detailed descriptions). USASMDC has coordinated and consulted with regulatory agencies on the potential effects of RTR mission flight test activities on UES consultation and coordination species. All flight test activities at USAKA must comply with standard operating procedures and mitigation measures detailed in these programmatic coordination and consultation documents (USFWS 2025b, NMFS 2026).

Deep Offshore Waters. Deep-water areas of USAKA have a wide variety of pelagic and benthic habitats that support a diversity of marine life. Many special status marine species have the potential to occur in these deep-water areas, including cetacean, sea turtle, and fish species protected as consultation species under the UES (see **Table D-5** and USASMDC 2025a and USASMDC 2025b for details). In addition to UES-protected species, a variety or other marine wildlife occurs in deep water habitats of the Central Pacific including a wide variety of pelagic and deep-water benthic invertebrates and fish. The open ocean areas of the ROI may also provide habitat for a number of foraging and resting seabirds, many of which are protected as coordination species under the UES such as boobies, frigatebirds, gulls, terns, noddies, shearwaters, petrels, and tropicbirds (see USASMDC 2025a).

3.3.2.2 Environmental Consequences for Biological Resources at Meck Islet

Because the launch pad sites at Meck Islet are regularly used for military testing and vegetation around launch and support facilities is routinely mowed/maintained, vegetation is highly disturbed and unlikely to be negatively impacted by proposed activities. There are no protected vegetation species within the ROI and impacts to be vegetation would be negligible and short term.

Impacts on terrestrial wildlife would be minor and short term. Some bird nesting habitat occurs on Meck, at least 2,000 feet from proposed alternative launch sites (**Figure 8**). Elevated noise levels from vehicle launch have the potential to cause short-term behavioral responses such as temporary startle reactions in birds. Birds roosting, foraging, or nesting in the area near a launch site may be exposed to flight test noise loud enough to cause behavioral disturbance. While birds may be more sensitive to elevated sound pressure level disturbance during certain nesting stages, previous observations of birds on Illeginni Islet after a payload impact test indicate that even birds close to a missile impact site (213 to 328 ft) return to normal behaviors soon after a test (Foster and Work 2011, Navy 2019). Even during the nesting season, discrete short-duration elevated noise levels are not expected to cause birds to abandon nests. Meck Islet has been regularly used for flight test launch and support activities for decades and the habitat continues to be suitable for bird nesting. Under normal operations, the Proposed Action would not result in any direct contact from falling components at Meck Islet. Even in the event of a launch failure from the BELS, no nesting birds would be expected to be affected by a falling AUR or debris and all Proposed Action impacts on birds would be negligible to minor. The Proposed Action is not likely to result in a significant adverse effect on the sustainability of any migratory bird population at Meck Islet and would not be expected to reduce the population size or distribution of sensitive biological resources.

Similarly, proposed activities would have negligible impacts on sea turtles. The Proposed Action would not destroy or alter beach habitats suitable for sea turtle haul out or nesting. The potential effects of elevated sound pressures on nesting or hauled-out sea turtles are addressed in the RTR Programmatic Biological Assessment (USASMDC 2025b) with the conclusion that no injury or behavioral disturbance to sea turtles is expected from these short-duration, single noise events.

Consequences for Marine Biological Resources

No impacts to nearshore vegetation, wildlife, or environmentally sensitive habitats are expected due to proposed activities at Meck Islet. Under normal operations, the Proposed Action would not result in any direct contact from falling components. Even in the unlikely event of a launch incident in which the vehicle or vehicle fragments fell onto Meck Islet, the AUR or debris would

fall within a couple hundred feet of the forward face of the launcher, and it is not expected that debris would fall into nearshore waters. The Proposed Action would require use of vessels to transport equipment to Meck Islet but any vessels transporting equipment would use established vessel routes and harbors as well as standard operating procedures for vessel activity (**Appendix C**) at USAKA as fully evaluated in RTR programmatic environmental evaluations. Some cetacean, sea turtle, and seabird species use nearshore waters; however, these animals would not be affected by vehicle overflight during a flight test or by the limited routine vessel traffic associated with the Proposed Action.

3.3.3 Cultural Resources at Meck Islet

3.3.3.1 Affected Environment for Cultural Resources at Meck Islet

The ROI for potential impacts to cultural resources at Meck Islet includes work areas associated with JFC flight test launch operations, including payload processing, transport, and launch. Regulations regarding the treatment of cultural resources at Meck Islet are summarized in **Appendix B**, **Section B.4.2.3** and more detailed information on the regulatory framework and affected environment for cultural resources at Meck Islet can be found in the *Historic Preservation Plan for United States Army Kwajalein Atoll* (USAKA Environmental Office 2006), the DEP for Protection of Cultural Resources (USAG-KA 2022), and the Marshall Islands, Kwajalein Atoll NRHP Nomination Form (Thompson 1984). Relevant information regarding cultural resources from these sources is incorporated here by reference with issues of particular concern or importance relative to the Proposed Action summarized in this section.

Historical and Ethnohistorical Background

Relatively little is known of the pre-Japanese-era history of Kwajalein Atoll, but it is believed that the atoll has been continuously inhabited by the Marshallese for approximately 2,000 years. Some islands, like Meck Islet, may have been used for gardens or resource gathering. The earliest recorded visit by Europeans occurred in 1804 when British Captain John Mertho visited the atoll. Shortly after the outbreak of World War I, the Japanese took over administration of the Marshall Islands and built fortifications. During WWII, the atoll was the site of fierce fighting, and the United States seized it from the Japanese in 1944. Meck Islet did not contain any Japanese fortifications, and no fighting took place there during the war.

After the conclusion of WWII, RMI became part of the United Nations Trust Territory of the Pacific Islands. Portions of the atoll, including Meck Islet, were used for military purposes by the United States to support nuclear weapons testing and as a test site for the Nike-Zeus Anti-Missile Program. The Kwajalein Missile Range, renamed RTR, was designated for testing guided and ballistic missiles and anti-ballistic missile systems. During the 1960s, Meck Islet was completely reconfigured for development of a Nike-X/Sentinel launch facility and airstrip. All vegetation on Meck Islet was removed during construction, and the entire island was graded. Landfilling occurred, which increased the size of Meck Islet by approximately 14 acres and beaches were replaced with riprap elevated up to 20 feet above high tide.

Since the 1960s, unique technical tests were developed and performed at RTR. Additionally, major tracking and instrumentation facilities in support of the space program and various defense testing activities have been established, many of which continue to the present. The RTR role during the Cold War period is significant for the technical activities which took place at the installation, and for their illustrative social role, indicative of the American and global culture

during the period following WWII. However, as discussed in **Appendix B, Section B.4.2.3**, the RMI Cultural and Historic Preservation Office (RMICHPO) does not recognize the Missile Defense Cold War context as significant, and therefore no Cold War era properties at USAKA are eligible for the RMI NRHP.

Previous Investigations and Known Cultural Resources

The first archaeological study in the Kwajalein Atoll took place in 1980, which identified an array of WWII artifacts and sites. All WWII resources on both Roi-Namur and Kwajalein Islands were listed in the U.S. NRHP in 1985 and designated the Roi-Namur Battlefield NHL and the Kwajalein Island Battlefield NHL. None of the other islands contained within USAKA have been nominated or considered for inclusion to the U.S. NRHP. Potential historic-period cultural resources that have not been evaluated are the WWII-era warships sunk in Kwajalein Lagoon.

Results of previous cultural resource investigations have concluded that the entire surface of Meck Islet has been disturbed by grading and construction for missile launch facilities. Now buried under fill layers, Meck Islet once housed the traditional Marshallese children's bathing pool and served as a place for initiation ceremonies. Also, two reef caverns at the northern tip of Meck Islet are associated with the story of *Lerok* and *Liwonwon*, and the story of the *mwio* is associated with the lagoonal shore of the island. Both areas are considered significant traditional locations. Historically, Meck Islet served as a residential location and prime intermediate destination for intra-atoll voyages and may have also served as the ancient residence location of the Rimeik clan. Archaeological surveys and testing of the entire island in both 1988 and 1994 failed to identify any prehistoric or historic archaeological sites or WWII features. Although Cold War era features may have previously been considered eligible for the U.S. NRHP, the RMI NRHP does not recognize this significance.

3.3.3.2 Environmental Consequences for Cultural Resources at Meck Islet

No known cultural resources are in or near the Proposed Action or the expected flight trajectory ranges. Previous archaeological studies have failed to identify any prehistoric or historic archaeological sites or WWII features on Meck and Cold War era features are not considered significant under the RMI NRHP. Additionally, Meck Islet is not part of either the Kwajalein or Roi-Namur NHLs. There are two traditional cultural locations in the vicinity of the Proposed Action. Alternative launch pad site MK-A is approximately 600 feet southeast of reef caverns associated with the story of *Lerok* and *Liwonwon* at the northern tip of Meck, and 450 feet northeast of the sacred lagoon location associated with the story of the *mwio* along the northwest shore. Alternative launch pad site MK-B is approximately 160 feet south and 600 feet north of those traditional cultural areas, respectively. Based on available information, no physical effects to known cultural resources resulting from the Proposed Action are anticipated. Any visual effects to the two traditional cultural locations are expected to be negligible since the setting has already been altered considerably and further changes to the setting would be consistent with the existing infrastructure and use of the launch facilities on Meck Islet.

Although the Proposed Action is not expected to adversely affect cultural resources on Meck Islet, coordination with the USAG-KA Environmental Office may be required.

Project personnel will be briefed during the routine construction briefings and before activities commence at each location regarding the significance of cultural resources and the penalties associated with their disturbance or collection. If, during the course of activities associated with

the Proposed Action, prehistoric, historic, or traditional cultural materials, particularly human remains, are discovered, standard operating procedures for the unexpected discovery of cultural resources contained in Section 4.5 of the Historic Preservation Plan for USAKA (USAKA Environmental Office 2006) must be followed as summarized in **Appendix C**, **Section C.3.3**.

3.3.4 Geology and Soils at Meck Islet

3.3.4.1 Affected Environment for Geology and Soils at Meck Islet

The best available information regarding the affected environment for geology and soil resources at Meck Islet can be found in Section 3.5 of the Integrated Flight Tests at USAKA/RTR EA (MDA 2012) which is incorporated here by reference. This section describes the existing resource conditions at the proposed alternative launch sites. Definitions related to geology and soil resources and the regulatory environment can be found in **Appendix B**, **Section B.5**.

The islands and reefs that collectively outline and form Kwajalein Atoll are typical of other mid-Pacific Ocean atolls and were formed in the same manner as Wake Atoll (see **Section 3.2.4.1**).

USAKA's soils are poor and considered to be low in fertility and almost exclusively composed of calcium carbonate from the accumulation of reef debris and oceanic sediments. Consequently, soils are extremely deficient in major soil constituents such as nitrogen, potash, and phosphorous. Major physical factors which characterize USAKA's soil include coarse soil particles, minimal amounts of organic matter, and alkaline soil pH (pH value above 7). In addition, water-holding capacity of the soil is poor due to the generally coarse grained-sands. (MDA 2012)

3.3.4.2 Environmental Consequences for Geology and Soils at Meck Islet

The proposed action at Meck Islet would have short-term minor impacts, if any, on geology and soils. Pre-launch activities at Meck Islet would occur in a previously disturbed areas which are typically used for flight test support activities and would result in minimal soil damage. The risks and impacts to Meck Islet soils from launch activities are similar to those described for SNI (**Section 3.1.4.2**). Soil analyses conducted at long-term launch sites on SNI indicate that deposition of launch combustion byproducts does not significantly alter the surrounding soil quality. (Navy 2022)

Vessel and aircraft operations at harbor locations, lagoon and ocean transit lanes, helipads and airstrips, and roads will have negligible to minimal impacts on geology and soil resources.

3.3.5 Hazardous Materials and Waste Management at Meck Islet

3.3.5.1 Affected Environment for Hazardous Materials and Waste Management at Meck Islet

Refer to **Appendix B, Section B.7** for a definition of hazardous materials and waste, as well as a description of the management and regulatory setting at USAKA, and specifically Meck Islet. Meck Islet, one of 11 USAKA islets, is surrounded by sensitive coral reef ecosystems and marine habitats. Effective hazardous materials and waste management is critical to prevent contamination of these ecologically significant areas, as well as the military and civilian personnel that support RTR operations and nearby populations in Kwajalein Atoll.

USAG-KA and RTR operations at USAKA handle limited quantities of hazardous materials, primarily for test operations and infrastructure support, with waste generation kept minimal due to operational consumption and strict management protocols. At USAKA, including Meck Islet,

hazardous materials such as cleaning solvents, paints, fuels, refrigerants, and pesticides are primarily used for facility support, flight operations, and various test activities (MDA 2012, MDA 2007).

Vessel and aircraft operations at USAKA can generate hazardous materials and waste. Vessels with diesel engines produce hazardous materials such as fuels, lubricants, oils, cleaning solvents, and used batteries, which are treated as hazardous waste when discarded. Similarly, fixed-wing aircraft and helicopters generate hazardous materials including fuels, oils, hydraulic fluids, cleaning chemicals, paints, and specialized components with radioactive or heavy metal content during operation and maintenance. Missile launches and flight test operations can also generate hazardous materials and waste, including the propellant and the byproducts (e.g., carbon dioxide, black carbon (soot), nitrogen oxides, alumina particles, chlorine species, hydrochloric acid, and water vapor) of combustion upon launch (National Research Council 1998). These materials are handled in accordance with the UES. (USASMDC 2024, Navy Safety Command 2020)

All hazardous materials imported into USAKA are tracked through a centralized system, with a Hazardous Materials Procedure submitted to the USAKA Commander within 15 days of receipt or before use. (USASMDC 2024) These materials, transported by ship or air, are distributed with prior authorization from the USAG-KA Environmental Office. (MDA 2012) Employees handling these substances receive specialized training, and usage is monitored by environmental compliance and safety offices (UES §2-11, UES § 3-6.5.1). Fuels, used mostly for pumps, generators, incinerators, aircraft, marine vessels, and vehicles, are stored in aboveground storage tanks across USAKA. (USAG-KA 2023, MDA 2007) Due to shallow groundwater and highly corrosive conditions, all underground storage tanks in USAKA were removed and the UES prohibits the installation of any new underground storage tanks.

Hazardous waste generated by RTR or range users is collected in labeled containers at work sites, stored at accumulation points designed to contain spills, and transferred to the Hazardous Waste 90-Day Storage Facility on Kwajalein Islet. Waste can be stored for up to 90 days (extendable to 120 days) before being shipped off-island to the continental United States for disposal. The Kwajalein Environmental Emergency Plan (KEEP), which incorporates a Hazardous Materials Management Plan, outlines responses to spills of oil, hazardous materials, pollutants, or contaminants. Spill prevention measures, including secondary containment for fuel storage and regular inspections, are implemented to minimize risks. The KEEP ensures rapid response to potential spills, with trained personnel and containment equipment readily available. Pollution prevention, recycling, and waste minimization follow UES and contractor procedures, with remedial actions conducted as needed. Regular environmental audits and inspections by USAG-KA and RTR compliance teams ensure adherence to UES and RMI regulations, maintaining high standards for hazardous materials and waste management. (USAG-KA 2023)

Hazardous materials, wastes, and petroleum products are stored on Meck Islet and, therefore, an inventory and monthly inspection of these stored products is required. The Meck Islet chemical inventory includes petroleum/oil/lubricants, compressed gases, paints, thinners, solvents, detergents, antifreeze, chlorine, oils, lubricants, maintenance chemicals, and cleaning chemicals. Facilities that have the potential to discharge materials into the environment include bulk storage tanks, a water treatment plant, a fuel pier, and the pipeline distribution system. Aircraft and other types of support vessels are not maintained or serviced on Meck Islet, but aircraft frequent the islet for mission support. Other mission support facilities include a facility used to house oxidizer missile propellant and a facility used for the storage of paint, paint-related materials, acid, and

compressed gas cylinders of refrigerant. To support Meck operations, hazardous materials storage areas are located in the Meck Island Control Building, a waste storage pad with more than 55 gallon volume capacity, and a warehouse where pallet(s) of helium cylinders may be stored. (USAG-KA 2023)

3.3.5.2 Environmental Consequences for Hazardous Materials and Waste Management at Meck Islet

Section 2.2.2 provides an overview of potential launch sites and support activities at Meck Islet needed for the Proposed Action. Minor construction needed to modify the launch pads, launch activities, and pre- and post-flight support activities are all potential sources of hazardous materials and waste. Under the Proposed Action for JFC flight tests conducted at Meck Islet and USAKA, no significant impacts on hazardous materials and waste management are expected.

All launch vehicle and payload characteristics would remain as described in previous program environmental documents and summarized in **Table 2**. Any necessary construction to modify the existing launch pad on Meck Islet would have no impact on the management of hazardous materials and wastes at USAKA and Meck Islet. All hazardous materials and wastes would be properly managed in accordance with RMI, UES, and DoD regulations. No unmitigable human or environmental health risks are anticipated from launch pad construction, pre- and post-test preparation, support, and operations. Any accidental spills from support equipment operations would be contained and cleaned up in accordance with the KEEP (USAG-KA 2023).

The Proposed Action would consist of up to six flight test launches per year conducted between the years 2022 and 2032. Under the Proposed Action, Meck Islet is one of eight potential land-based launch locations identified in **Table 3**. Should a launch abnormality occur at Meck Islet, any debris and hazardous materials would be properly handled and disposed of according to the policies and procedures outlined in **Appendix B, Section B.6.2.3**.

Without environmental controls, the use and disposal of hazardous materials at USAKA and Meck Islet could significantly impact the environment. These risks are mitigated through strict adherence to the UES (UES § 3-6), KEEP, and Hazardous Materials Management Plan. These protocols ensure proper storage, handling, and use of hazardous materials and waste, tailored to range users. Established management and pollution prevention practices minimize the volume and environmental impact of hazardous substances to the greatest extent practicable.

3.3.6 Health and Safety at Meck Islet

3.3.6.1 Affected Environment for Health and Safety at Meck Islet

For a definition of health and safety, as well as a description of the regulatory setting at USAKA and Meck Islet, refer to **Appendix B, Section B.7**.

The UES specifies a number of environmental controls (e.g., hazardous materials and waste management, water quality, air quality, notification procedures), that help ensure the protection of public health and safety (USASMDC 2024). Range safety is achieved by adhering to DoD, Army, and RTR regulations, employing established procedures, and implementing safety measures to prevent injury and minimize property damage. These safety protocols apply to the preparation, testing, and execution of programs, while also supporting the successful achievement of mission objectives. All RTR flight test missions must follow standard and

mission-specific safety procedures, overseen by the RTR Safety Office. (MDA 2012) A formal process ensures mission approval is granted only after confirming the safety of proposed tests.

Ground safety at USAKA and RTR protects the public and personnel during hazardous operations, including handling explosives, rocket propellants, and heavy equipment. Activities such as building construction, missile assembly, and launches currently occur on Meck Islet. Launch facilities, including missile assembly buildings, launch control centers, and launch pads, are designed and spaced per DoD Explosives Safety Board standards and Army Regulation 385-64. Remote launches may be implemented on smaller islands if buffer distances are insufficient to protect personnel. During hazardous operations, personnel at launch sites are limited, and ground safety plans outline emergency responses for scenarios like misfires, launch pad fires, or errant missile impacts. Fire suppression systems are installed in most operational buildings, with staffed fire stations on Meck Islet. (MDA 2012)

Explosives are used for missile flight test programs and for the disposal of unexploded ordnance, small arms rounds, and fireworks. In small amounts, explosives are used in missile test flights for stage separation and flight termination systems, and stored on Kwajalein, Roi-Namur, and Meck. Additionally, there is a high likelihood of encountering Munitions and Explosives of Concern (MEC) during construction, maintenance/repair, and cleanup projects across USAKA. An Explosive Safety Submission provides comprehensive safety guidance for MEC at USAKA. Compared to other USAKA islets such as Kwajalein and Roi Namur, there is a low probability of encountering MEC on Meck Islet. Of the safety guidelines provided in the Explosive Safety Submission, it is specified that qualified unexploded ordnance personnel provide standby (on-call) and active (on-site) support during construction activities at potential MEC sites to ensure the safety of construction personnel. (USACE 2023)

The health and safety of workers and the public during RTR launch operations are governed by RCC documents, DoD directives, Army regulations, and program-specific ground and flight safety plans. RTR Range Safety uses predictive modeling to assess hazards to personnel and the public before launches, ensuring risks stay within acceptable limits. Flight paths and booster drop zones are designed to avoid populated areas. Range Safety personnel monitor designated surveillance and clearance zones to protect individuals, aircraft, and maritime vessels. RTR coordinates NOTAMs through the Federal Aviation Administration for air traffic in the launch corridor and NTMs via the U.S. Coast Guard for maritime safety. In the event of a flight anomaly, the vehicle's flight termination system halts thrust and flight, directing debris to preprogrammed ocean impact zones to avoid inhabited areas. RTR maintains robust safety management procedures throughout all launch phases. (MDA 2012, MDA 2007)

3.3.6.2 Environmental Consequences for Health and Safety at Meck Islet

Under the Proposed Action, no significant impacts on health and safety would be anticipated as the result of construction or modification of the launch pad or for flight test launch and support activities at Meck Islet and USAKA. As described in **Section 3.3.6.1**, flight tests at Meck Islet would be similar to prior activities on the island with similar levels of risk to personnel. There would be no increase in risk to the public. As described in **Sections 2.1.1** and **3.3.6.1**, NTMs and NOTAMs would be issued prior to flight tests to warn mariners and pilots.

Through the application of UES, DoD, Army, and RTR health and safety requirements identified in **Appendix B, Section B.7.2.3**, missile test programs are conducted with minimal risk to military personnel, contractors, and the public. For JFC flight tests, range safety representatives

at the RTR would closely coordinate development of risk analyses based upon the trajectories, probability for system failure, and any population densities near missile flight paths. For nighttime launches, existing permanent launch pad lighting or temporary transportable lighting may be used in accordance with any installation-specific lighting requirements. Should a launch abnormality occur, the flight termination system or command destruct package on the missile or payload would be activated to stop forward thrust and flight. RTR Range Safety will not allow a flight test to proceed if the calculated risk exceeds the RCC 321-23 criteria, which requires that individuals within the general public not be exposed to a probability of casualty greater than 1 in 1,000,000 for any single mission (RCC 2023).

With the implementation of all standard health and safety procedures described in **Section 3.3.6.1**, effects of vehicle launch activities on health and safety are highly unlikely to occur and would be negligible to minor direct short-term effects.

3.3.7 Water Resources at Meck Islet

3.3.7.1 Affected Environment for Water Resources at Meck Islet

The best available information regarding the affected environment for water resources at Meck Islet can be found in Section 3.13 of the Integrated Flight Tests at USAKA/RTR EA (MDA 2012) and in Section 5.8 of the RTR Programmatic Notice of Proposed Activity (USASMDC 2025a) which is incorporated here by reference. This section describes the existing resource conditions at the proposed alternative launch sites. Definitions related to water resources and the regulatory environment can be found in **Appendix B**, **Section B.8**.

Water resources at Meck Islet include groundwater; however, the amount of fresh groundwater available on Meck for potable water consumption has not been investigated (MDA 2012). Meck islet has two rainwater catchment basins located adjacent to the runway (DynCorp 2020). The treatment of rainwater consists of coagulation/flocculation, clarification, filtration, and disinfection (DynCorp 2020).

The UES coastal water classifications include Class AA, Class A, and Class B waters. Class AA water includes deep ocean and lagoon waters that shall remain in as nearly the natural pristine state as possible, with an absolute minimum pollution from any source (UES § 3-2.4.1(a)). Class A water is protected for recreational and subsistence uses, potential use as a potable-water source, and to support the propagation of aquatic life (UES § 3-2.4.1(b)). Class B water is protected for uses including small-boat harbors, shipping, fishing, recreation, and propagation of aquatic life (UES § 3-2.4.1(c)). Support sites include the harbors at Kwajalein and Meck. The waters in and near the harbors are designated as Class B near docking facilities and Class A in the rest of the nearshore areas. These areas are approved for vessel traffic. (USASMDC 2024)

3.3.7.2 Environmental Consequences for Water Resources at Meck Islet

The Proposed Action at Meck Islet would have only short-term, minor impacts, if any, on water resources at this launch location. The impacts of exhaust released from solid rocket systems associated with the Proposed Action on water quality will be minimal. The greater potential for impacts to water quality is from the possibility of spills associated with handling, shipping, and storage of rocket fuels and oxidizers (DynCorp 2020). There are no known surface water, groundwater, or flood zones on Meck. In the unlikely event of an accidental release of hazardous material at the storage area, emergency response personnel would comply with the KEEP (USAG-KA 2023). Proposed Action effects on groundwater would be negligible and short term.

In the unlikely event of a launch failure from BELS, launch vehicle components may enter nearshore waters and have adverse effects on coastal water due to contaminants of concern in the materials. Metals such as aluminum, magnesium, titanium, lithium, and nickel may affect water quality. If debris enters nearshore waters, debris will be cleaned up as soon as it is safe for personnel to enter the area. Coastal water classifications would not be affected by this rare event and effects from the Proposed Action on nearshore water would be negligible and short term.

Any modifications of launch sites at Meck Islet due to proposed launch pad construction would be minor and would not impact ongoing or future operations or water quality.

Support vessel activities and traffic would not significantly affect water quality. There is a potential for the discharge of oil accumulated in a vessel's bilges; however, the UES specifies that discharges of oil from a properly functioning engine of a vessel are not deemed harmful (UES § 3-2.8.4 (b)). Vessel operations would not involve intentional discharges of fuel, toxic waste, or plastics or other solid wastes that could harm marine life and impacts to water quality due to vessel activity would be negligible.

3.3.8 Cumulative Effects at Meck Islet

Past present and reasonably foreseeable actions at Meck Islet and USAKA have recently been documented in a number of environmental compliance documents which are incorporated here by reference as summarized in **Table 4**.

Analyses in **Section 3.3** do not reveal any potentially significant environmental impacts of the Proposed Action when considered alone. While past, present, and future actions at USAKA (see **Section 3.0**) and globally have had or would have significant environmental impacts (see Navy 2025b and USASMDC 2025a for detailed summaries of cumulative environmental impacts at USAKA), no substantial interactive or additive factors have been identified which would indicate that the Proposed Action at Meck Islet would meaningfully contribute to cumulative effects when considered with these actions. Overall, the Proposed Action at Meck Islet when considered with other actions would not result in a significant contribution to cumulative effects.

Proposed Action emissions would have negligible to minor impacts on air quality at Meck Islet. While the Proposed Action would result in a net increase in air emissions at Meck Islet, programmatic evaluation of all future RTR mission flight test activities concluded that even taken together, all current and future flight test activities would not result in significant cumulative impacts on air quality (USASMDC 2025a). Considering the low potential localized pollutant buildup, the additive effects from combined flight test launches would result in short-term, minor to moderate impacts on air quality with no long-term accumulation (USASMDC 2025a).

While past land use and current military actions on Meck Islet have likely had cumulative impacts on biological resources, there is a robust regulatory mechanism (the UES) that reduces the risk of cumulative impacts to the environment, including biological resources, at Meck and throughout USAKA. Combined RTR mission flight test activities would have negligible to moderate impacts on biological resources at USAKA with the biggest risks being from direct contact and hazardous materials release in nearshore marine environments (USASMDC 2025a). While there are likely to be substantial cumulative effects on biological resources due to past and ongoing military testing in combination with commercial activities and global stressors, the Proposed Action would not have a negligible contribution to these cumulative effects.

Cultural resources on Meck Islet mainly consist of Cold War era infrastructure and two known traditional cultural locations. Military use and environmental conditions have had cumulative effects on cultural resources at Meck Islet. Particularly, any prehistoric archaeological sites on or near the surface would have been impacted when the island was reconfigured and the Nike-X facilities were first developed in the 1960s. Additional impacts resulting from the Proposed Action are expected to be negligible as any ground disturbance would occur in previously disturbed locations, the visual setting of the traditional cultural locations has already been altered, and further changes to the setting from the Proposed Action would be consistent with existing infrastructure and use of the launch facilities on Meck Islet. Any further development at Meck Islet would comply with the processes and mitigation measures set forth in the UES, Historic Preservation Plan for United States Army Kwajalein Atoll (USAKA Environmental Office 2006), Army Regulation 200-4 for Cultural Resources Management, and the DEP for Protection of Cultural Resources (USAG-KA 2022). Therefore, it is unlikely that significant cumulative impacts on cultural resources would occur due to the Proposed Action in combination with future projects.

Proposed Action effects on water quality, soils, and hazardous materials would be negligible with primary potential effects being from launch emissions. Programmatic evaluation of all future RTR mission flight test activities concluded that even taken together, flight test activities would not have significant impacts on water quality, geology and soils, or hazardous materials and waste management (USASMDC 2025a). There have been cumulative adverse effects to these resources at multiple and nearshore ocean locations across USAKA due to past military and non-military activities. Existing contamination remains an issue at USAKA; however, the Proposed Action would result in a negligible contribution to these cumulative effects.

3.4 Broad Ocean Areas

The BOA is defined as any ocean area along the missile's flight path that is outside of territorial seas. Under maritime law, territorial seas generally extend seaward up to 12 nm from a nation's official baseline (NOAA 2025a). This section focuses on the potential for environmental impacts of the Proposed Action within the BOA including: (1) expansion of the JFC flight test Pacific BOA area to align with launch from the newly considered launch site alternatives described in (see **Figure 1**) and (2) utilization of target rafts for all past and new alternative payload target sites in the Atlantic and Pacific BOAs.

3.4.1 Air Quality in the BOA

3.4.1.1 Affected Environment for Air Quality in the BOA

The ROI for the air quality analysis in the BOA includes the Atlantic and Pacific Oceans as they extend beyond 3 nm from the shoreline. In general, from 3 to 200 nm offshore, the USEPA is the primary regulatory authority for enforcing federal air quality standards. Beyond 200 nm, which is the outer limit of the U.S. Exclusive Economic Zone, no air quality regulatory agency has jurisdiction over the BOAs.

Air quality in the BOA is generally considered to be good, primarily due to a combination of meteorological, geographic, and operational factors that promote rapid dispersion of air emissions. While trade winds contribute to rapid atmospheric mixing and horizontal dispersion of air pollutants across vast ocean areas, the wide geographic area that ocean-going vessels operate within minimize the potential for concentrated emissions. The absence of fixed

stationary emissions sources, such as industrial facilities, and flat ocean topography reduces the potential for localized pollution hotspots. In addition, aircraft, whether commercial or participating in launch operations, typically operate above the atmospheric mixing zone, a three-dimensional vertical column of air generally up to 3,000 feet above ground level where criteria pollutant emissions, due to atmospheric mixing and dispersion, have the greatest potential to directly impact human health and air quality. Emissions released above this altitude distance are often too highly dispersed within the atmosphere to impact pollutant concentrations over land and the surface of the water in the lower atmosphere, measured at ground-level monitoring stations, upon which federal, state, and local attainment designations and other regulatory decisions are based.

3.4.1.2 Environmental Consequences for Air Quality in the BOA

Under the Proposed Action, the JFC flight test Pacific BOA area would be expanded to accommodate the flight tests from SNI, Wake Island, and Meck Islet. Previous air quality analyses in the 2022 JFC EA/OEA determined that there would be no significant impact on air quality from air emissions associated with JFC flight tests in the Pacific BOA. Because the Proposed Action would not change the type or quantity of flight tests occurring in the Pacific BOA, as analyzed in the 2022 JFC EA/OEA, it is assumed this action would not result in any new or increased impacts increased impacts beyond those already evaluated.

Vessel operations associated with the Proposed Action include the deployment and retrieval of instrumentation and target rafts in the Atlantic and Pacific BOAs, which would represent a small fraction of total vessel traffic and associated emissions in the ROI. These operations would occur intermittently over the course of a given year and would occur across the open ocean. Based on emissions estimates from similar marine vessel operations within a Pacific Navy range (Navy 2004 as cited in Navy 2025b), total emissions from the Proposed Action are anticipated to remain well below the PSD significance threshold of 250 tpy for any individual criteria pollutant (25 tpy for lead). In addition, operation of the raft during a test event would occur well beyond the 3-nm state coastal boundary, and almost certainly outside territorial waters, limiting the potential for impacts to jurisdictionally regulated air quality areas. The strong and consistent trade winds, combined with the open ocean environment, would facilitate dispersion and dilution of pollutants emitted by rafts and support vessels, minimizing the likelihood of localized air quality effects. As a result, impacts on air quality from the Proposed Action would be negligible.

3.4.2 Hazardous Materials and Waste Management in the BOA

3.4.2.1 Affected Environment for Hazardous Materials and Waste Management in the BOA

For a definition of hazardous materials and waste management in the BOA, as well as a description of the regulatory setting in the BOA, refer to **Appendix B, Section B.6** of this document, the JFC EA/OEA (Navy and Army 2022), and the JFC Supplemental EA/OEA (Navy and Army 2024).

The environment affected by hazardous materials and waste in the Atlantic and Pacific BOAs is described Section 3.1.3.2 of the Navy CPS Weapon System Flight Tests EA/OEA (Navy 2025b). While there are slight differences in flight test activity areas between the Navy CPS Weapon System Flight Tests EA/OEA and this JFC Second Supplemental EA/OEA, the affected

environment described in Navy 2025b aligns with the anticipated affected environment for this Proposed Action.

3.4.2.2 Environmental Consequences for Hazardous Materials and Waste Management in the BOA

Expanded Flight Test Area in the Pacific BOA

The potential impacts from ocean flight corridors and booster drop/payload impact zones to hazardous materials and waste management in the Pacific BOA were considered negligible or nonexistent in both the JFC EA/OEA (Navy and Army 2022) and the JFC Supplemental EA/OEA (Navy and Army 2024). The justification for not analyzing these activities in Section 3.5 of the 2022 JFC EA/OEA remains true for the proposed expansion of the JFC flight test area in the Pacific BOA within this second Supplemental EA/OEA. The impacts from hazardous materials and waste due to flight corridors and booster drop and payload impact zones in the expanded flight test area in the Pacific BOA are anticipated to be negligible.

Target Rafts in the Atlantic and Pacific BOAs

The Proposed Action would involve increased activity and vessel movement in the Atlantic and Pacific BOAs at terminal target sites and support locations for up to 4 weeks for each flight test. Standard operating procedures and mitigations would be followed from the JFC EA/OEA (Navy and Army 2022) and the JFC Supplemental EA/OEA (Navy and Army 2024).

For tests using a floating target raft, the raft is expected to remain relatively intact and floating. The raft would be deployed from a support ship prior to the flight test and would remain on-station for several hours using small electric motors. It is not planned or expected that target rafts would sink during flight test activities. Little to no floating debris would be expected and any visible debris found floating would be collected for disposal as much as practicable. All lithium-ion phosphate batteries used on the target raft for sensor operation would be recovered unless they were inadvertently damaged beyond the point of safe retrieval/recovery. It is considered unlikely that damage beyond the point of recovery would occur and lithium on the raft would not exceed reportable quantities. During post-flight activities the raft would be loaded onto a support ship for transport back to the appropriate port. No release of hazardous material and waste is anticipated from the use of floating target rafts in the BOAs and there would be no impacts to environmental quality.

3.4.3 Health and Safety in the BOA

3.4.3.1 Affected Environment for Health and Safety in the BOA

For a definition of health and safety, as well as a description of the regulatory setting in the BOA, refer to **Appendix B, Section B.7** of this document, the JFC EA/OEA (Navy and Army 2022), and the JFC Supplemental EA/OEA (Navy and Army 2024).

The affected environment in relation to health and safety in the Pacific and Atlantic BOAs as described in the JFC EA/OEA (Navy and Army 2022) and the JFC Supplemental EA/OEA (Navy and Army 2024) aligns with that as anticipated for the Proposed Activities in the BOA for this second Supplemental EA/OEA.

Naval air and sea operations routinely take place in the Atlantic and Pacific BOAs, and Army and RTR air and sea operations routinely take place in the Pacific BOA. Range safety procedures for RTR flight tests, as described in **Section 3.3.6.1**, apply to some activity areas in the Pacific

BOA. Personnel on Navy ships follow OPNAVINST 5100.19F guidelines, alongside general DoD and Navy Safety Program policies, as well as OSHA regulations and training requirements (Navy 2025b). The Navy and RTR notify the U.S. Coast Guard and Federal Aviation Administration of operations requiring sea or air space closures or restrictions, enabling public notification through NTMs and NOTAMs. These notices detail the duration and location of closures due to activities that may pose risks to surface vessels or aircraft.

3.4.3.2 Environmental Consequences for Health and Safety in the BOA

Expanded Flight Test Area in the Pacific BOA

The potential impacts from ocean flight corridors and booster drop/payload impact zones to health and safety in the Pacific BOA was considered negligible or nonexistent in both the JFC EA/OEA (Navy and Army 2022) and the JFC Supplemental EA/OEA (Navy and Army 2024). The justification for not analyzing these activities in Section 3.5 of the 2022 JFC EA/OEA remains true for the proposed expansion of the JFC flight test area in the Pacific BOA within this second Supplemental EA/OEA. The impacts to health and safety due to flight corridors and booster drop and payload impact zones in the expanded flight test area in the Pacific BOA are anticipated to be negligible.

Target Rafts in the Atlantic and Pacific BOAs

All BOA target sites would be outside of exclusive economic zones in international waters. For floating target rafts, applicable DoD, RTR, and Navy safety procedures and regulations would be followed. Following a flight test with impact on a target raft, flight test personnel would assess the condition and safety status of the target raft before conducting necessary cleanup and equipment retrieval. All personnel would wear proper personal protective equipment, as necessary. Under the Proposed Action, no significant impacts on health and safety would be anticipated as the result of the use of floating target rafts for JFC flight test activities in the BOA.

3.4.4 Cumulative Effects in the BOA

Past present and reasonably foreseeable actions in the BOA have recently been documented in a number of NEPA compliance documents which are incorporated here by reference as summarized in **Table 4**.

Analyses in **Section 3.4** do not reveal any potentially significant environmental impacts of the Proposed Action in the BOA when considered alone. While some of the past, present, and future actions considered (see **Section 3.0**) have had or would have significant environmental impacts (see Navy 2025a, Navy 2025b, Navy and Army 2024, and Navy and Army 2022 for detailed summaries of cumulative environmental impacts in the BOA), no substantial interactive or additive factors have been identified which would indicate that the Proposed Action in the BOA would meaningfully contribute to cumulative effects when considered with these actions.

Proposed Action emissions would have negligible impacts on air quality in the BOA These emissions may contribute incrementally to cumulative effects on air quality but not in a measurable or detectable way. Given the absence of stationary emission sources in the BOA, the spatial dispersion of mobile sources, and prevailing meteorological conditions that promote rapid dispersion of pollutants, no measurable degradation of air quality is expected when considering the Proposed Action when combined with past, present, and foreseeable future actions. Global rocket emissions impact the global atmosphere through stratospheric ozone depletion and

deposition of particulates in the stratosphere (Ross and Vedda 2018). These global atmospheric impacts are likely to increase in the future as space traffic is projected to increase (Ross and Vedda 2018). While global rocket emissions are a minor contributor to overall human impacts on the atmosphere (Ross and Vedda 2018) actions such as the Proposed Action and other present and future actions will increase space launches/traffic over the BOAs and would have minor additive contributions to cumulative effects on air quality.

Proposed Action effects on water quality and waste materials would be negligible with primary potential effects being from vehicle components and debris entering marine environments. Pollution and marine debris from anthropogenic sources are widespread in the world's oceans and have been adversely impacting marine ecosystems and human health (Navy 2025b). In general, there is less pollution and marine debris in deep offshore ocean areas than in nearshore coastal locations, but cumulative effects from past federal, state, public, and commercial activities have still occurred in the BOAs (Navy 2025b). There is some concern about persistent metal and plastic materials from military expended materials accumulating in the offshore marine environment (Navy 2025a); however, the incremental contribution of the Proposed Action to these cumulative effects on water quality and waste materials would be negligible.

4.0 OTHER CONSIDERATIONS REQUIRED BY NEPA

4.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with the DoD procedures for implementing NEPA (90 FR 27857 [30 June 2025]), NEPA documents should consider other environmental requirements and integrate any required environmental analyses as well as document compliance or consistency with these other requirements. **Table 8** identifies the principal federal and state laws and regulations that are applicable to the Proposed Action and indicates how the Proposed Action would be in compliance with these laws and regulations.

Table 8. Summary of Consistency with Other Laws, Plans, Policies, and Regulations for the Proposed Action

Applicable Laws, Executive Orders, Policies, and Guidance	Status of Compliance
Laws	
National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.); Department of Defense (DoD) procedures for implementing NEPA (90 FR 27857 [30 June 2025])	This EA/OEA has been prepared to meet requirements under NEPA and DoD implementing procedures. This EA/OEA presents the best available information to describe the human and physical environment and provides a full analysis of the potential environmental consequences of the Proposed Action and alternatives to support public involvement, informed decision making, and interagency coordination and consultation. The Navy and Army certify that in their expert opinion, this EA/OEA represents a good-faith effort to fulfill NEPA's requirements within the Congressional timeline; that it is substantially complete; that, it thoroughly considers the factors mandated by NEPA; and that the analysis within it is adequate to inform and reasonably explain the final decision regarding the Proposed Action.
Clean Air Act (CAA) (42 U.S.C. § 7401 et seq.)	The Proposed Action is consistent with and compliant with the CAA. Estimated emissions would be below applicable conformity thresholds and/or would not result in violations of the NAAQS.
Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.)	The Proposed Action has been evaluated to ensure it would not result in significant adverse impacts to water quality standards at proposed launch sites and is compliant with the CWA.

Applicable Laws, Executive Orders, Policies, and Guidance	Status of Compliance
Coastal Zone Management Act (16 U.S.C. § 1451 et seq.)	The Proposed Action is consistent with the current and ongoing use of coastal zone at SNI and PMSR as evaluated in the PMSR EIS/OEIS (Navy 2022) and HCTT EIS/OEIS (Navy 2025a). If SNI is selected for implementation of the Proposed Action, the Action Proponents will prepare a consistency determination in accordance with the Coastal Zone Management Act if necessary. Any determination would be submitted to the California Coastal Commission in coordination with Commander, Navy Installations Command and Navy Region Southwest.
National Historic Preservation Act (NHPA) (Section 106, 16 U.S.C. § 470 et seq.)	The Navy will comply with Section 106 of the NHPA for the Proposed Action at SNI, Wake Island, and Meck Islet (USAKA) as required and under the various regulatory conditions and described in **Appendix B, Section B.4.2.**

Endangered Species Act (ESA)
(16 U.S.C. § 1531 et seq.)
	The Navy has complied with consultation requirements under Section 7 of the ESA for those Preferred Alternative locations and proposed activities which may affect species listed or proposed for listing, or critical habitats designated under the ESA. The following consultations cover potential effects of the Proposed Action on ESA-listed species or critical habitats:
	• Launch and support activities at Meck Islet and USAKA:
	  ○ Potential effects on hauled out sea turtles consistent with programmatic consultation for RTR mission flight test activities (USFWS 2025b)
	  ○ Potential effects on marine species consistent with programmatic consultation for RTR mission flight test activities (NMFS 2026)
	• Proposed activities in the BOA: Potential effects on marine species consistent with consultations for JFC activities (NMFS 2021, NMFS 2023).
	If the SNI alternative launch site is selected for implementation of the Proposed Action in the future, additional consultation with USFWS may be required.

Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1361 et seq.)	The Action Proponents have determined that the Proposed Action under the Preferred Alternative would not result in the taking of marine mammals as defined under the MMPA and that no permitting under the MMPA is required. If the SNI alternative launch site is selected for implementation of the Proposed Action in the future, additional coordination and consultation with NMFS regarding potential impacts to marine mammals (including regarding letters of authorization for Level B harassment from launch activities) may be required for compliance with MMPA requirements.
Migratory Bird Treaty Act (16 U.S.C. § 703-712)	The Proposed Action would not result in the intentional take of migratory birds or incidental take of migratory birds which would result in a significant adverse effect on a population of migratory birds. The Action Proponents have coordinated with the USFWS and are compliant with requirements of the Migratory Bird Treaty Act.
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSA) (16 U.S.C. § 1801 et seq.)	The Proposed Action would not significantly reduce the quantity or quality of any Essential Fish Habitat (EFH) or habitat areas of particular concern as detailed in the biological resource sections of **Chapter 3.0**. The JFC Action would have negligible adverse impacts on EFH in the Hawaiian Islands exclusive economic zone and the Action Proponents consulted with the NMFS Pacific Islands Office on these potential effects in 2023.
American Antiquities Act (54 U.S.C. § 320301 et seq.)	The Navy's policies for cultural resource management address its responsibilities as a federal land manager under the American Antiquities Act. No additional regulatory compliance under the Antiquities Act is required for marine national monuments. The U.S. Armed Forces are exempt from marine national monument prohibitions and the Navy has concluded that the Proposed Action would not damage or destroy monument resources or result in any abandonment of materials within marine national monuments.

Applicable Laws, Executive Orders, Policies, and Guidance	Status of Compliance
National Marine Sanctuaries Act (16 U.S.C. § 1431 et seq.)	The Action Proponents have complied with requirements under the National Marine Sanctuaries Act and have determined that the Proposed Action would not injure sanctuary resources as detailed in **Chapter 3.0**.
Marine Protection, Research and Sanctuaries Act (33 U.S.C. § 1401 et seq)	Through implementation of the Navy's Environmental Readiness Program (OPNAVINST 5090.1E), the Navy complies with all applicable federal and international laws and regulations pertaining to marine pollution, and the jettison or discharge of materials from ships and aircraft. The Proposed Action does not involve ocean dumping as defined under Marine Protection, Research and Sanctuaries Act Section 3(f) because the primary purpose of this federal activity would not be disposition of material and any depositing of debris or other materials into ocean waters would be incidental. Furthermore, as clarified by the U.S. Senate, if "material from missiles and debris from gun projectiles and bombs ultimately come to rest in the protected waters. Such activities are not covered by this Act" (Senate Report Number 92-451).
U.S. Public Law 108-188, Compact of Free Association Amendments Act of 2003	Under the Compact of Free Association, the United States and the Republic of the Marshall Islands (RMI) declared that NEPA was to be applied to all U.S. Government activities in the RMI and agreed to develop standards for environmental protection substantively similar to several U.S. environmental protection laws (e.g., CWA, ESA, and CAA). The USAKA Environmental Standards (UES; USASMDC 2024) serves as the environmental standards under the compact for all U.S. Government activities that occur on the USAG-KA/RTR controlled islands and the mid-atoll corridor as well as all USAG-KA/RTR activities within the RMI. The Action Proponents have prepared this EA/OEA to comply with the NEPA requirements in the compact. The Action Proponents plan to comply with all requirements set forth in the UES before implementation of the Proposed Action.
Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §§ 6901 et seq)	Military munitions used for their intended purpose during training and testing are exempt from the definition of solid waste under RCRA (40 CFR § 266.202).
Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 116 et seq.)	Navy policy is to comply with Emergency Planning and Community Right-to-Know Act and to encourage compliance with state and local Emergency Planning and Community Right-to-Know Act programs to the extent that resources allow and where such compliance does not interfere with command mission accomplishment or other legal obligations.
Executive Orders	
EO 12088, Federal Compliance with Pollution Control Standards	The Action Proponents are in full compliance with all applicable pollution control standards as required by EO 12088 and relevant federal, state, and local environmental laws and regulations.
EO 12114, Environmental Effects Abroad of Major Federal Actions; DoD regulations for implementing EO 12114 (32 CFR § 187)	The Action Proponents are compliant with EO 12114 and DoD implementing regulations which require federal agencies to evaluate the environmental consequences of federal actions outside the United States to facilitate informed decision-making. This EA/OEA serves as documentation of the need of and environmental effects of the Proposed Action.
EO 13045, Protection of Children from Environmental Health Risks & Safety Risks	In accordance with Navy procedures, the Proposed Action would not result in disproportionate environmental health or safety risks to children.
EO 13089, Coral Reef Protection	The Action Proponents have complied with EO 13089 by identifying proposed activities that may affect U.S. coral reef ecosystems, have evaluated the effects of proposed activities on these ecosystems, and have determined that proposed activities would not substantially degrade the conditions of U.S. coral reef ecosystems, as discussed in the biological resource sections of **Chapter 3.0**.
EO 13158, Marine Protected Areas	The Action Proponents have complied with EO 13158 by identifying the marine protected areas that have the potential to be affected by the Proposed Action and evaluating potential effects to natural or cultural resources that are protected by each marine protected area. The Proposed Action is not expected

Applicable Laws, Executive Orders, Policies, and Guidance	Status of Compliance
	to harm the natural and cultural resources that are protected by marine protected areas as detailed in **Chapter 3.0**.
EO 13840, Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States	The Action Proponents would comply with requirements of EO 13840 as requested and required by the interagency Ocean Policy Committee established under this EO and has coordinated with other federal agencies on ocean related matters to the extent appropriate and consistent with national security interests and statutory requirements.
Other Policies and Procedures	
Navy Environmental Readiness Program Manual (OPNAVINST 5090.1)	This EA/OEA has been prepared in accordance with environmental program guidance in OPNAVINST 5090.1.
International Convention for the Prevention of Pollution from Ships (MARPOL)	The Navy adheres to all applicable requirements within the Convention and domestic enacting laws (like APPS).

Acronyms and Abbreviations: BOA = Broad Ocean Area, CFR = Code of Federal Regulations, DoD = Department of Defense, Navy = Department of the Navy, EA/OEA = Environmental Assessment / Overseas Environmental Assessment, EIS/OEIS = Environmental Impact Statement / Overseas Environmental Impact Statement, EO = Executive Order, ESA = Endangered Species Act, FR = Federal Register, HCTT = Hawaii California Training and Testing, JFC = Joint Flight Campaign, NAAQS = National Ambient Air Quality Standards, NEPA = National Environmental Policy Act, NMFS = National Marine Fisheries Service, OPNAVINST = Chief of Naval Operations Instruction, PMSR = Point Mugu Sea Range, RTR = Ronald Reagan Space and Missile Test Range, SNI = San Nicolas Island, USAG-KA = United States Army Garrison – Kwajalein Atoll, USAKA = United States Army Kwajalein Atoll, U.S.C. = United States Code, USFWS = United States Fish and Wildlife Service

4.2 Relationship Between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

Implementation of the Proposed Action would not significantly impact the long-term natural resource productivity in any of the Proposed Action areas. The Proposed Action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment. No site alternatives have been identified which would reduce flexibility to pursue other options in the future or would eliminate the possibility of other uses of the proposed sites.

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Public and Agency Involvement and Distribution

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APPENDIX A. PUBLIC AND AGENCY INVOLVEMENT AND DISTRIBUTION

This section includes a summary of agency and public involvement and stakeholder outreach activities to be conducted by the United States Department of the Navy (Navy) and the United States Army (Army) during the development of the Joint Flight Campaign (JFC) Second Supplemental Environmental Assessment / Overseas Environmental Assessment (EA/OEA) and during the public review and comment period for the Draft Supplemental EA/OEA.

A.1 Agency Involvement and Distribution

A.1.1 Coordination with Proposed Launch Installations

To ensure the best available information regarding the affected environment for proposed launch installations is used in analysis and to ensure analyses and consultations are consistent with policies and requirements at those installations, the Supplemental EA/OEA was coordinated with host launch installation environmental division points of contact prior to public and regulatory agency involvement. A list of installations organizations contacted during development of the Draft Supplemental EA/OEA is included in **Table A-1**.

Table A-1. Launch Installation Offices Contacted During Supplemental EA/OEA Development

San Nicolas Island / Point Mugu Sea Range, California
Point Mugu Sea Range Sustainability Office Naval Base Ventura County, NEPA Environmental Compliance Program
Wake Island
611th Civil Engineer Squadron (CES/CEIEC) Air Support, Pacific Air Forces Joint Base Elmendorf-Richardson, Alaska, Environmental Element
United States Army Kwajalein Atoll, Republic of the Marshall Islands
Ronald Reagan Space and Missile Test Range (RTR)

Acronyms and Abbreviations: NEPA = National Environmental Policy Act

A.1.2 Regulatory Agency Coordination and Consultation

Interagency and intergovernmental coordination is an integral part of EA/OEA preparation. The Navy and Army have notified relevant agencies on the availability of the Draft Supplemental EA/OEA for the Proposed Action to identify potential environmental issues and regulatory requirements associated with project implementation. A list of agencies notified or contacted during development of the Supplemental EA/OEA is included in **Table A-2**. Coordination and consultation correspondence with agencies with regards to the Supplemental EA/OEA and the Proposed Action will be included in **Appendix E**. The following discussions summarize the agency coordination and consultations that are planned to occur based on selection of the Preferred Alternative. If the San Nicolas Island (SNI) alternative launch location is selected for Proposed Action implementation in the future, additional consultations may be required, including with the California Coastal Commission under the Coastal Zone Management Act. If SNI is selected in the future, the Commander, Navy Installations Command and Navy Region Southwest may also need to consult with Indian tribes, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation in compliance with Section 106 of the National Historic Preservation Act.

Table A-2. Agencies that Received the Draft Supplemental EA/OEA Notice of Availability

United States Federal Agencies
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Islands Regional Office, Habitat Conservation Division
Pacific Islands Regional Office, Protected Resources Division
Office of National Marine Sanctuaries
U.S. Army
U.S. Army Corps of Engineers, Honolulu District, Environmental Programs Branch
U.S. Army Garrison – Kwajalein Atoll
Environmental Division
Directorate of Public Works
U.S. Environmental Protection Agency
Region 9, Environmental Review Branch, Tribal, Interagency, and Policy Division
Region 9, Freely Associated States Circuit Rider
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
Pacific Islands Refuges and Monuments Office
Pacific Islands Heritage Marine National Monument
Wake Atoll National Wildlife Refuge Office
National Park Service
National Register and National Historic Landmarks Program
Advisory Council on Historic Preservation
United States State Agencies
Alaska Department of Natural Resources
Alaska Office of History and Archaeology, State Historic Preservation Officer
Republic of the Marshall Islands Agencies
Environmental Protection Authority

Acronyms and Abbreviations: U.S. = United States

U.S. Fish and Wildlife Service Coordination and Consultation

Pursuant to requirements of the Endangered Species Act (ESA), the Action Proponents have evaluated the potential effects of the Proposed Action under the Preferred Alternative on ESA listed species, candidate species, and designated critical habitats under the jurisdiction of the United States Fish and Wildlife Service (USFWS). The Action Proponents have concluded that proposed activities would have no effects on ESA-listed seabird species in the Broad Ocean Area (BOA) and that no consultation with the USFWS under Section 7 of the ESA is required for these activities. No proposed launch activities have been identified which would affect ESA-listed species at Wake Island or Meck Islet. The Action Proponents plan to coordinate with the USFWS regarding these conclusions with submission of this Supplemental EA/OEA to appropriate USFWS regional offices. If the alternative launch site at SNI is selected in the future, additional coordination or consultation with the USFWS for potential effects on Western snowy plovers may be required.

Pursuant to provisions of the Migratory Bird Treaty Act, the Action Proponents have evaluated the effects of the Proposed Action on migratory birds, including birds of conservation concern, in this EA/OEA. The Action Proponents plan to coordinate with the USFWS on potential effects to migratory birds with submission of this Supplemental EA/OEA to appropriate USFWS regional offices.

National Marine Fisheries Service Coordination and Consultation

Pursuant to requirements of the ESA, the Action Proponents have evaluated the potential effects of the Proposed Action on ESA listed species, candidate species, and designated critical habitats. The Action Proponents have concluded that proposed activities under the Preferred Alternative would not affect ESA-listed marine species or designated critical habitats in the BOA in a manner or to an extent not already considered in the consultation previously completed with the National Marine Fisheries Service (NMFS) for JFC activities (consultation reference number OPR-2023-02234). All potential Proposed Action effects on marine ESA-listed species at Meck Islet and USAKA were included in the programmatic consultation for Ronald Reagan Space and Missile Test Range (RTR) Mission Flight Test Activities (consultation reference number PIRO-2022-03234). The Action Proponents have concluded that no additional consultation with NMFS is required for the Preferred Alternative and plan to coordinate with NMFS regarding these conclusions with submission of this Supplemental EA/OEA to appropriate NMFS regional offices.

Pursuant to provisions of the Marine Mammal Protection Act (MMPA) and the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSA), the Navy has evaluated the effects of the Proposed Action on all marine mammals and on Essential Fish Habitat (EFH). The Navy has determined that proposed activities under the Preferred Alternative would not result in take of marine mammal species and has determined that the Proposed Action would not significantly reduce the quality and/or quantity of EFH. The Navy plans to coordinate with NMFS on the relevant analyses and conclusions with submission of this EA/OEA to appropriate NMFS regional offices. If the alternative launch site at SNI is selected for JFC activities in the future, additional coordination or consultation with the NMFS for potential incidental harassment effects on hauled out pinnipeds may be required if not covered under existing authorizations for launch activities at SNI.

UES Appropriate Agencies Coordination and Consultation

Pursuant to requirements of the UES, the Action Proponents have evaluated the effects of the Proposed Action on species and habitats listed as coordination or consultation resources under the UES. The Action Proponents have concluded that the Proposed Action at USAKA would have no effects on these species and habitats not already considered in the programmatic coordination's and consultations for RTR Mission Flight Test Activities (NMFS consultation reference number PIRO-2022-03234 and USFWS consultation reference number 2025-0151205-S7-001). Similarly, all JFC flight test activities would occur under requirements of the RTR Mission Flight Test Activities Programmatic Document of Environmental Protection and no further compliance actions under UES Section 2-18.3 are required for the Proposed Action . The Navy plans to coordinate with USFWS, NMFS, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and RMI Environmental Protection Authority, as UES Appropriate Agencies, with submission of this EA/OEA.

A.2 Public Involvement and Distribution

A.2.1 Public Distribution and Repositories

The Notice of Availability for this Draft Supplemental EA/OEA and Draft Finding of No Significant Impact (FONSI) / Finding of No Significant Harm (FONSH) was published in local and regional newspapers for locations associated with the Proposed Action (see **Table A-3**) and distributed to the agencies listed in **Table A-2**. An example newspaper display advertisement is shown in **Figure A-1** and the agency distribution letter can be found in **Appendix E**.

Table A-3. Newspaper Publications for the Notice of Availability

Location	Newspaper
Ventura County, California	Ventura County Star
Honolulu, Hawai'i	Honolulu Star-Advertiser
Kwajalein Atoll, Republic of the Marshall Islands	Kwajalein Hourglass
	The Marshall Islands Journal

Figure A-1. Example Newspaper Display Advertisement for Notice of Availability of the Draft EA/OEA

Copies of the Draft Supplemental EA/OEA and Draft FONSI/FONSH were placed in local repositories (**Table A-4**) for public access and also made available over the Internet at https://www.nepa.navy.mil/JFCSecondSupplementalEA. Those agencies, organizations, and

repositories that were directly notified about the Notice of Availability or received a copy of the document are listed in **Table A-2** and **Table A-3**.

Table A-4. Repositories that Received Copies of the Draft Supplemental EA/OEA

Repository Name	Address
Grace Sherwood Library	Kwajalein Island, Republic of the Marshall Islands
Hawaii State Library	478 South King Street, Honolulu, HI 96813
Oxnard Downtown Main Library	251 S. A Street, Oxnard, CA 93030
Roi-Namur Library	Roi-Namur, Republic of the Marshall Islands

Comments on the Draft Supplemental EA/OEA and Draft FONSI/FONSH will be accepted over the 30-day public review period from May 11 through June 10, 2026, as specified in the Notice of Availability. Written comments can be submitted using either of these two ways: (1) via the Internet at https://www.nepa.navy.mil/JFCSecondSupplementalEA or (2) mailed to the following address:

Environmental Program Manager/SP2521
Strategic Systems Programs
1250 10th Street SE, Bldg. 200, Suite 3600
Washington Navy Yard, DC 20374-5127

Following the 30-day public review period, the Navy and Army will decide whether to finalize the Supplemental EA/OEA and sign the FONSI/FONSH, which would allow the proposed JFC flight tests to proceed, or to prepare an Environmental Impact Statement / Overseas Environmental Impact Statement. If the Action Proponents decide to finalize the document, then it will take into consideration those public and agency comments received as part of developing the Final Supplemental EA/OEA and FONSI/FONSH. Once completed, the Final Supplemental EA/OEA and FONSI/FONSH would be accessible via the internet at https://www.nepa.navy.mil/JFCSecondSupplementalEA

A.2.2 Comments Received on the Draft Supplemental EA/OEA

Public and agency comments received during the public comment period and considered during development of the Final Supplemental EA/OEA will be listed in a table in this section of the Supplemental EA/OEA.

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B

Definition of Resources and Regulatory Setting

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Appendix B Acronyms and Abbreviations

Acronym / Abbreviation	Definition
ACHP	Advisory Council on Historic Preservation
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFOSH	Air Force Occupational Safety, Fire, and Health
AFPD	Air Force Policy Directive
Air Force	United States Department of the Air Force
Army	United States Department of the Army
BOA	Broad Ocean Area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CERCLA	Comprehensive Environmental Response, Compensation, and Liability
CFR	Code of Federal Regulations
CWA	Clean Water Act
DAF	United States Department of the Air Force
DEP	Document of Environmental Protection
DoD	Department of Defense
DOT	Department of Transportation
EA/OEA	Environmental Assessment / Overseas Environmental Assessment
eDASH	Electronic Dashboard
EFH	Essential Fish Habitat
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA ID	U.S. Environmental Protection Agency Identification
ESA	Endangered Species Act
FR	Federal Register
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
HPP	Historic Preservation Plan
ICRMP	Integrated Cultural Resources Management Plan
JFC	Joint Flight Campaign
KEEP	Kwajalein Environmental Emergency Plan
kg	Kilogram(s)
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act

Acronym / Abbreviation	Definition
Navy	United States Department of the Navy
NBVC	Naval Base Ventura County
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
nm	Nautical Miles
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OPNAVINST	Chief of Naval Operations Instruction
OSHA	Occupational Safety and Health Administration
PMSR	Point Mugu Sea Range
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RMI	Republic of the Marshall Islands
RMICHPO	Republic of the Marshall Islands Cultural and Historic Preservation Office
RTR	Ronald Reagan Space and Missile Test Range
SNI	San Nicolas Island
SPCC	Spill Prevention, Control, and Countermeasures
TCP	Traditional Cultural Property
TSCA	Toxic Substances Control Act
UES	*Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands;* USAKA Environmental Standards
USAG-KA	United States Army Garrison–Kwajalein Atoll
USAKA	United States Army Kwajalein Atoll
USASMDC	United States Army Space and Missile Defense Command
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WIA	Wake Island Airfield
WOTUS	Waters of the United States
§	Section, Part

APPENDIX B. DEFINITION OF RESOURCES AND REGULATORY SETTING

This appendix includes definitions of resource topics analyzed in the Supplemental Environmental Assessment / Overseas Environmental Assessment (EA/OEA) as well as detailed information about the regulatory setting for those resource topics. These definitions and requirements outlined in the regulatory setting were utilized for description of the affected environment and evaluation of environmental consequences of the Proposed Action.

B.1 General Regulatory Setting

Overseas Activities

For all activities that would take place outside the United States or U.S. territories, requirements of Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Actions*; and Department of Defense (DoD) procedures for implementing EO 12114 (32 Code of Federal Regulations [CFR] § 187) apply.

Kwajalein Atoll

Meck Islet is part of Kwajalein Atoll within the Republic of the Marshall Islands (RMI). As such, the evaluation of resources follows regulatory requirements set forth in EO 12114, *Environmental Effects Abroad of Major Federal Actions*, as well as those outlined in the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands* or UES, 17th edition (USASMDC 2024).

The Compact of Free Association between the RMI and the United States (48 United States Code [U.S.C.] § 1921) requires all U.S. Government activities at USAKA and all DoD and Ronald Reagan Space and Missile Test Range (RTR) activities in the RMI to conform to specific compliance requirements, coordination procedures, and environmental standards identified in the UES. As specified in Section 2-2 of the UES, these standards also apply to all activities occurring in the territorial waters of the RMI. Joint Flight Campaign (JFC) flight test activities would take place at Meck Islet and in Kwajalein Atoll waters and must comply with the UES (USASMDC 2024).

B.2 Air Quality

B.2.1 Definition of Resource

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. A region's air quality is influenced by many factors, including the type and number of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

The six principal pollutants defining air quality, called "criteria pollutants," include carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, suspended particulate matter (measured less than or equal to 10 microns in diameter and less than or equal to 2.5 microns in diameter), and lead. Carbon monoxide, sulfur oxides, nitrogen oxides, lead, and some particulates are emitted directly into the atmosphere from emissions sources. Nitrogen oxides, ozone, and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compound and nitrogen oxide emissions are precursors of ozone and are used to represent ozone generation.

B.2.2 Regulatory Setting

National Ambient Air Quality Standards and General Conformity

Under the Clean Air Act (CAA) (42 U.S.C. Chapter 85), the U.S. Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) (40 CFR § 50) for criteria pollutants. NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. The NAAQS are listed in **Table B-1**. Each state has the authority to adopt air quality standards stricter than those established under the federal NAAQS.

Table B-1. National Ambient Air Quality Standards

Criteria Pollutant	Primary/Secondary	Averaging Period	NAAQS	
			Level	Form
CO	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
	Primary	1-hour	35 ppm	
SO_2 [1]	Primary	1-hour (2010)	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	Annual	10 ppb (2024)	Annual mean, averaged over 3 years
NO_2	Primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and secondary	Annual	53 ppb	Annual mean
O_3	Primary and secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
$PM_{2.5}$	Primary	Annual	9 µg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m^3	
	Primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
PM_{10}	Primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Pb [2]	Primary and secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded

Source: 40 CFR 50

Notes: [1] The USEPA first established primary SO_2 standards in 1971 at 140 ppb over a 24-hour averaging period and at 30 ppb over an annual averaging period (36 Federal Register 8186). In 1996, USEPA retained the 1971 standards without revision (61 Federal Register 25566). In 2010, the USEPA revised the primary NAAQS for SO_2 and revoked the two 1996 primary standards (0.03 ppm annual standard and 0.14 ppm 24-hour standard, as identified in 40 CFR § 50.4) because they would not provide additional public health protection given the revised 1-hour standard at 75 ppb.

[2] In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standard (1.5 µg/m^3 as a calendar quarter average) also remains in effect.

Acronyms and Abbreviations: CO = carbon monoxide, NAAQS = National Ambient Air Quality Standards, NO_2 = nitrogen dioxide, O_3 = ozone; Pb = lead, PM_{10} = particulate matter measured less than or equal to 10 microns in diameter, $PM_{2.5}$ = particulate matter measured less than or equal to 2.5 microns in diameter, ppb = parts per billion, ppm = parts per million, SO_2 = sulfur dioxide, USEPA = United States Environmental Protection Agency, µg/m^3 = micrograms per cubic meter

Areas that are and have historically followed the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that exceed a NAAQS are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan to reach attainment or ensure continued attainment. The USEPA General Conformity Rule applies to federal actions occurring in nonattainment and maintenance areas. When the total emissions of nonattainment and maintenance pollutants (or

their precursors) exceed specified thresholds (i.e., de minimis levels; specified at 40 CFR § 93.153), a general conformity determination is required. The General Conformity Rule does not apply to federal actions occurring in attainment or unclassified areas.

Hazardous Air Pollutants

USEPA has identified 188 hazardous air pollutants (HAPs), also referred to as toxic air pollutants or air toxics, that are known or suspected to cause cancer or other serious health and environmental effects. NAAQS have not been established for HAPs because USEPA's strategy is to use reductions of HAP emissions from stationary industrial, mobile, and indoor sources to provide nationwide health protections. National emission standards exist for controlling HAPs from specific types of stationary sources, which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from stationary sources (40 CFR §§ 61 and 63). The primary control methodologies for these pollutants for mobile sources involve reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutants generated during combustion. To assess risk from exposure to air toxics, the USEPA has tabulated long-term (chronic) and short-term (acute) dose-response assessments that could be used for risk assessments of HAPs (USEPA 2024).

Stratospheric Ozone Depletion

The stratosphere extends from 6 miles to approximately 30 miles above the Earth's surface and contains the Earth's ozone layer. This layer is important in absorbing harmful ultraviolet radiation from the sun. Over the last few decades, anthropogenic (human-made) gases released into the atmosphere, mainly chlorine-containing substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons), have reduced ozone concentrations in the stratosphere which filter harmful ultraviolet sunlight. Chlorofluorocarbons, hydrochlorofluorocarbons, and halons have been widely used as refrigerants, solvents, and fire extinguishing agents, including in electronics cooling and protection systems. Once released, these gases are stable enough to mix globally in the atmosphere until they reach the stratosphere, where ultraviolet radiation breaks them down, releasing chlorine and bromine atoms that catalytically destroy ozone.

The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted globally in 1987 and mandates the phase-out and control of the production, consumption, and use of ozone-depleting substances, including chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform, and hydrochlorofluorocarbons. In the United States, the implementation of the Montreal Protocol is governed by Title VI of the CAA and is administered by USEPA under 40 CFR § 82, Protection of Stratospheric Ozone. The United States also ratified the Kigali Amendment in 2022, which targets the phasedown of hydrofluorocarbons. Although hydrofluorocarbons are not ozone-depleting, they are included under the Montreal Protocol due to their environmental impact.

High-temperature afterburning reactions in the exhaust plume of rockets can contribute to overall global chlorine loading, which contributes to ozone depletion. Stratospheric hydrogen chloride can have a half-life of 2.3 years, but hydrogen chloride from rocket emissions could have longer lifetimes because part of the emissions occurs at atmospheric levels above the stratosphere. Aluminum oxide, which is emitted from the rocket exhaust as solid particles, could contribute to ozone depletion via activation of chlorine in the atmosphere. Emissions of nitrogen oxides

produced in the exhaust plume of rockets can also contribute to stratospheric ozone depletion (Navy and Army 2022).

The DoD has internal policies and environmental programs aimed at minimizing ozone depleting substances emissions, managing equipment containing ozone depleting substances, and procuring acceptable alternatives in accordance with federal and international mandates.

Permitting

The CAA establishes several permitting programs to regulate emissions from various sources to protect public health and the environment. Key permits include the Title V Operating Permit for major sources of air pollution; the New Source Review permit for construction or modification of stationary emissions sources; the Prevention of Significant Deterioration (PSD) program, which focuses on protecting air quality in areas that meet or exceed air quality standards by limiting new pollution in these areas; and the Nonattainment Area New Source Review permit, which applies to areas that do not meet the NAAQS, requiring stricter controls on new or modified facilities to reduce emissions. In addition, the CAA mandates permits for HAPs, which are aimed at controlling emissions of toxic pollutants from major sources through the Maximum Achievable Control Technology standards.

Title V of the CAA requires states, Washington D.C., and U.S. territories and possessions to develop USEPA-approved operating permit programs for major sources of air pollution. Where a local program is not approved, the USEPA implements the program directly. The requirements of Title V are outlined in the federal regulations in 40 CFR § 70. The PSD program protects the air quality in attainment areas. PSD regulations impose limits on the emissions from new or modified major sources. The PSD process would apply to all pollutants for which the region is in attainment.

B.2.2.1 San Nicolas Island, Point Mugu Sea Range

San Nicolas Island (SNI) is within Ventura County, California. Under the California Clean Air Act, the California Air Resources Board established California Ambient Air Quality Standards (CAAQS) for criteria pollutants and for sulfate, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The CAAQS are listed in **Table B-2**. For select pollutants and averaging periods, the CAAQS are more stringent than the NAAQS.

USEPA Region 9 and the California Air Resource Board regulate air quality in California. The Ventura County Air Pollution Control District is responsible for air monitoring, permitting, enforcement, and air quality planning within Ventura County. The USEPA has designated Ventura County as nonattainment for the 8-hour ozone NAAQS (40 CFR § 81.305). The Ventura County 8-hour ozone nonattainment area includes all of mainland Ventura County, including areas out to 3 miles from the mainland shore, but excludes SNI (VCAPCD 2022). Therefore, SNI is considered by USEPA to be in attainment or unclassifiable for the NAAQS. The California Air Resource Board has designated the county as nonattainment for the 1-hour and 8-hour CAAQS for ozone, and the 24-hour and annual arithmetic mean CAAQS for particulate matter less than or equal to 10 microns in diameter (VCAPCD 2025). Because SNI is 54 nautical miles (nm) from the California mainland and outside the air basin boundaries typically used in CAAQS designations, the island is generally considered as in attainment or unclassifiable for the state standards.

Table B-2. California Compared to National Ambient Air Quality Standards

Criteria Pollutant	Averaging Period	CAAQS	NAAQS	
		Level	Primary/Secondary	Level
CO	8-hour	9 ppm	Primary	9 ppm
	1-hour	20 ppm	Primary	35 ppm
	8-hour (Lake Tahoe)	6 ppm	—	—
SO_2 [1]	1-hour (2010)	0.25 ppm	Primary	75 ppb
	Annual	—	Secondary	10 ppb (2024)
	24-hour	0.04 ppm	—	—
NO_2	1-hour		Primary	100 ppb
	Annual		Primary and secondary	53 ppb
O_3	8-hour	0.070 ppm	Primary and secondary	0.070 ppm
	1-hour	0.09 ppm	—	—
$PM_{2.5}$	Annual	12 µg/m^3	Primary	9 µg/m^3
	Annual	—	Secondary	15 µg/m^3
	24-hour	—	Primary and secondary	35 µg/m^3
PM_{10}	24-hour	50 µg/m^3	Primary and secondary	150 µg/m^3
	Annual arithmetic mean	20 µg/m^3	—	—
Pb [2]	Rolling 3-month average	—	Primary and secondary	0.15 µg/m^3
	30-day average	1.5 µg/m^3	—	—
Visibility reducing particles	8-hour	0.23 km^{-1}	No NAAQS	
		0.07 km^{-1} (Lake Tahoe)		
Sulfates	24-hour	25 µg/m^3		
Hydrogen sulfide	1-hour	0.03 ppm		
Vinyl chloride	24-hour	0.01 ppm		

Sources: 40 CFR 50, CARB 2024

Notes: [1] The USEPA first established primary SO_2 standards in 1971 at 140 ppb over a 24-hour averaging period and at 30 ppb over an annual averaging period (36 Federal Register 8186). In 1996, USEPA retained the 1971 standards without revision (61 Federal Register 25566). In 2010, the USEPA revised the primary NAAQS for SO_2 and revoked the two 1996 primary standards (0.03 ppm annual standard and 0.14 ppm 24-hour standard, as identified in 40 CFR § 50.4) because they would not provide additional public health protection given the revised 1-hour standard at 75 ppb.

[2] In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standard (1.5 µg/m^3 as a calendar quarter average) also remains in effect.

Acronyms and Abbreviations: CAAQS = California Ambient Air Quality Standards, CO = carbon monoxide, km^{-1} = per kilometer; NAAQS = National Ambient Air Quality Standards; NO_2 = nitrogen dioxide; O_3 = ozone; Pb = lead; PM_{10} = particulate matter measured less than or equal to 10 microns in diameter, $PM_{2.5}$ = particulate matter measured less than or equal to 2.5 microns in diameter, ppb = parts per billion, ppm = parts per million, SO_2 = sulfur dioxide, µg/m^3 = micrograms per cubic meter

SNI is subject to the provisions under Title V for operating permits. Permitting oversight is coordinated through the Ventura County Air Pollution Control District. If any stationary sources on the island meet the thresholds for major sources of air pollution, they would be required to obtain a Title V operating permit in accordance with 40 CFR § 70. Since the island is located in an area currently designated as attainment for all criteria pollutants, the PSD program would apply to any new or modified major sources of emissions. These programs ensure that air quality on SNI is maintained in accordance with both federal and state air quality standards.

B.2.2.2 Wake Island

Air quality jurisdiction at Wake Island falls under USEPA Region 9. As an unorganized, unincorporated territory of the United States administered by the Department of the Air Force, Wake Island would be subject to the CAA; however, USEPA Region 9 has determined that the CAA does not apply to the atoll (Chugach 2004 as cited in DAF 2024b). If USEPA determines in the future that the CAA does apply to Wake Island, the atoll would be subject to the Title V operating permit requirements for major sources of air pollution. Although Wake Island has no permanent civilian population and limited industrial activity, any stationary sources that meet or exceed major source thresholds would be required to obtain a Title V operating permit as outlined in 40 CFR § 70. The PSD program would apply to new or modified major stationary sources of emissions for pollutants where the atoll attains the NAAQS. Compliance with these federal air quality programs would ensure that activities on Wake Island maintain air quality consistent with national standards.

B.2.2.3 Meck Islet, Kwajalein Atoll

The UES (USASMDC 2024) serves as the primary environmental compliance framework for DoD operations on Kwajalein Atoll. While the UES is not a federal regulation, it is designed to align with U.S. environmental laws and regulations, including the CAA, to ensure that DoD activities do not adversely affect the environment. UES § 3-1 is derived from 40 CFR §§ 50 through 87, which establish air quality regulations under the CAA. Per the UES, ambient air concentrations for criteria pollutants are not allowed to be increased above the level predicted to exist on the effective date of the standards by more than 25 percent of the NAAQS and in no case shall ambient air concentrations for criteria pollutant base allowed to exceed 80 percent of any NAAQS. These ambient air quality standards are listed in **Table B-3**.

Table B-3. UES Kwajalein Atoll Ambient Air Quality Standards

Pollutant	Averaging Period	Ambient Standard[1]	Increment[2]
SO_X	1-hour	60 ppb	18.75 ppb
CO	1-hour	28 ppm	8.75 ppm
	8-hour	7.2 ppm	2.25 ppm
$PM_{2.5}$	24-hour	28 µg/m^3	9 µg/m^3
	Annual	9.6 µg/m^3	3 µg/m^3
PM_{10}	24-hour	120 µg/m^3	38 µg/m^3
O_3	8-hour	0.06 ppm	0.02 ppm
NO_2	1-hour	80 ppb	25 ppb
	Annual	42.4 ppb	13.25 ppb
Pb[3]	Rolling 3-month average	0.12 µg/m^3	0.04 µg/m^3

Sources: USASMDC 2024

Notes: [1] Values reflect 80 percent of the NAAQS

[2] Values reflect 25 percent of the NAAQS

[3] Rounded to hundredth µg/m^3

Acronyms and Abbreviations: CO = carbon monoxide, NO_2 = nitrogen dioxide, O_3 = ozone, Pb = lead; PM_{10} = particulate matter measured less than or equal to 10 microns in diameter, $PM_{2.5}$ = particulate matter measured less than or equal to 2.5 microns in diameter, ppb = parts per billion, ppm = parts per million, SO_X = sulfur oxides, µg/m^3 = micrograms per cubic meter

Because Kwajalein Atoll is not U.S. sovereign territory, the provisions of the CAA, including Title V operating permit requirements and the PSD program, do not apply. Instead, all major stationary sources of criteria pollutants, HAPs, and activities covered by U.S. National Emission

Standards for HAPs must be covered by a Document of Environmental Protection (DEP), which is subject to review and agreement by appropriate U.S. and RMI agencies, including USEPA, United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Army Corps of Engineers, and RMI Environmental Protection Authority, as well as public review. Pollutant thresholds that determine whether a new stationary source required a DEP are listed in **Table B-4**. The UES includes general provisions for maintaining inventories of emissions sources, reporting, eliminating, or reducing the use of chemicals associated with HAPs, and eliminating or reducing the use of ozone depleting substances (USASMDC 2024).

Table B-4. UES Kwajalein Atoll Pollutant Thresholds for Major Stationary Sources

Parameter	Potential to Emit
CO	100 tpy
NO_X	40 tpy
SO_2	40 tpy
O_3	40 tpy of VOC
Pb	0.6 tpy
Particulate matter	25 tpy of particulate matter emissions 15 tpy of PM_{10} emissions 10 tpy of $PM_{2.5}$ emissions
Municipal waste combustor organics (measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	3.5×10^{-6} tpy
Municipal waste combustor metals (measured as particulate matter)	15 tpy
Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride)	40 tpy
Municipal solid waste landfill emissions (measured as non-methane organic compounds)	50 tpy
Fluorides	3 tpy
Sulfuric acid mist	7 tpy
Hydrogen sulfide	10 tpy
Total reduced sulfur (including hydrogen sulfide)	10 tpy
Reduced sulfur compounds	10 tpy

Sources: USASMDC 2024; 40 CFR 52.21(b)(23)(i), Amended at 73 FR 28349
Acronyms and Abbreviations: CO = carbon monoxide; FR = Federal Register, NAAQS = National Ambient Air Quality Standards; NO_X = nitrogen oxides, O_3 = ozone; Pb = lead, PM_{10} = particulate matter measured less than or equal to 10 microns in diameter, $PM_{2.5}$ = particulate matter measured less than or equal to 2.5 microns in diameter, ppb = parts per billion, ppm = parts per million, SO_2 = sulfur dioxide, tpy = tons per year, $\mu g/m^3$ = micrograms per cubic meter, VOC = volatile organic compound

In accordance with Section 161(a)(2) of the Amended Compact of Free Association between the United States and the RMI, the Navy and Army are required to apply the National Environmental Policy Act (NEPA) to their activities in the RMI as if those activities were conducted within the United States. Pursuant to this requirement, and consistent with UES § 2-22, NEPA documents addressing actions at USAKA must incorporate appropriate climate change analysis. The inclusion of a climate change analysis in this document does not signify that such considerations are required under NEPA or DoD NEPA guidance for federal actions occurring outside the jurisdiction of the United States.

Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate system. Greenhouse gases (GHGs) are gas emissions that trap heat in the atmosphere and include water vapor, carbon dioxide, methane, nitrous oxide, tropospheric ozone, and several fluorinated and chlorinated gaseous compounds. Most GHGs occur naturally in the atmosphere, but increases in concentrations result from human activities

such as burning fossil fuels. To estimate global warming potential, all GHGs are expressed relative to a reference gas, carbon dioxide, which is assigned a global warming potential of one (1). All GHGs are multiplied by their global warming potential, and the results are added to calculate the total equivalent emissions of carbon dioxide.

B.2.2.4 Broad Ocean Area

Under the CAA, air quality regulations and permitting responsibilities are delegated to state agencies, which typically have regulatory authority over air emissions within 3 nm of the coastline, encompassing the state's coastal waters. Beyond this 3 nm boundary, the area is considered part of the Outer Continental Shelf and falls under federal jurisdiction. Generally, from 3 to 200 nm from the shore, the USEPA is the primary regulatory authority for enforcing federal air quality standards, particularly through the Outer Continental Shelf Air Regulations. The Outer Continental Shelf Air Regulations apply primarily to oil and gas facilities but could also be applicable to other stationary sources such as platforms or vessels stationed at a fixed location for extended periods. The regulation does not apply to mobile sources such as ships in transit or aircraft. Beyond 200 nm from the shore, which marks the limit of the U.S. Exclusive Economic Zone, the Atlantic and Pacific broad ocean areas (BOAs) do not have an air quality regulatory agency that has jurisdiction over the region.

Note that while certain islands or atolls may fall within the BOA geographically, they may lie outside U.S. jurisdiction and are not subject to CAA requirements or oversight by U.S. regulatory agencies. In this case, local or national environmental authorities govern air quality regulations according to their own legal and regulatory systems.

B.3 Biological Resources

B.3.1 Definition of Resource

For the purposes of this Supplemental EA/OEA, biological resources are defined as native or naturalized vegetation and wildlife and the habitats in which they occur. Plant and plant communities are referred to as vegetation and animal species are referred to as wildlife. Habitat is defined as the biotic and abiotic conditions that support plant or animal species. Within this Supplemental EA/OEA, biological resources are divided into five major categories: (1) terrestrial vegetation, (2) terrestrial wildlife, (3) marine vegetation, (4) marine wildlife, and (5) environmentally sensitive habitats. Within each category, descriptions focus on important or special-status species and habitats. Special-status species refers to those species listed by federal or state agencies including those afforded protection under the regulations listed in the Regulatory Setting subsections. Environmentally sensitive habitats are those areas designated by the USFWS or NMFS as critical habitat for Endangered Species Act (ESA) listed species, habitats protected by other regulations, or other sensitive habitats such as wetlands, habitats limited in distribution, or important seasonal use areas for wildlife (e.g., breeding areas, feeding areas, or migration routes). Biological resources within the affected environment for the Proposed Action are described with the purpose of evaluating the effects of the Proposed Action and in proportion to the magnitude of potential effects.

B.3.2 Regulatory Setting

Endangered Species Act

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires action

proponents to consult with USFWS or NMFS to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of designated critical habitat (16 U.S.C. §§ 1531-1544). For all ESA listed species, the ESA defines harm as an act which kills or injures wildlife including significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (16 U.S.C. §§ 1531-1544). The ESA defines harassment as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. § 1801 et seq.) provides for the conservation and management of U.S. fisheries. Under the MSA, Essential Fish Habitat (EFH) consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity. An EFH may include U.S. waters within exclusive economic zones (from the territorial sea baseline out to a distance of 200 nm) and covers all fish species within a fishery management unit (50 CFR § 600.805). Under the MSA, an adverse effect means any impact that reduces quality and/or quantity of EFH (50 CFR § 600.810). Adverse effects may include direct or indirect physical, chemical, or biological alterations 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 and/or quantity of EFH (50 CFR § 600.810). EFH and its geographic boundaries are defined by regional fisheries management councils. Federal agencies must evaluate the effects of an action on EFH and must consult with NMFS on actions that may adversely affect EFH (67 Federal Register [FR] 2343 [January 17, 2002]).

Marine Mammal Protection Act

All marine mammals are protected under the provisions of the Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1361 et seq.). The MMPA prohibits any person or vessel from "taking" marine mammals in the United States or the high seas without authorization. As defined by the MMPA, Level A harassment of cetaceans is any act that has the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment is defined as any act that has the potential to disturb a marine mammal or marine mammal stock in the wild by causing behavioral pattern disruptions, including but not limited to migration, breathing, nursing, breeding, feeding, or sheltering. The National Defense Authorization Act of Fiscal Year 2004 (Public Law 108-136) amended the definition of harassment as it applies to military readiness activities or scientific research activities conducted by or on behalf of the Federal Government, consistent with Section 104(c)(3). In this Act, military readiness activities were defined as "all training and operations of the Armed Forces that relate to combat" and "the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use." For military readiness activities Level B harassment is defined as any act that 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 [16 U.S.C. 1362 (18)(B)(i) and (ii)]. Section 101(a)(5) of the MMPA directs the Secretary of the Department of Commerce to allow, upon request, the incidental (but not intentional) taking of marine mammals if certain findings are made and

regulations are issued. Under the MMPA, marine mammal stocks can be listed as depleted. The term depleted is defined as any case in which a species or population stock is determined to be below its optimum sustainable population.

Migratory Bird Treaty Act

Migratory and most native-resident bird species are protected under the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712), and their conservation by federal agencies is mandated by EO 13186, *Migratory Bird Conservation*. Under the Migratory Bird Treaty Act, it is unlawful to take, harm, possess, or trade migratory birds, their parts, nests, or eggs unless permitted by regulation. This includes actions such as hunting, capturing, killing, selling, buying, shipping, or transporting these birds or their products. Under EO 13186, federal agencies must evaluate the effects of actions on migratory birds with emphasis on species of concern, which were later defined as birds of conservation concern by the USFWS (USFWS 2021). Birds listed as birds of conservation concern are species with the highest conservation priority which without additional conservation actions are likely to become candidates for listing under the ESA (USFWS 2021). The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. Congress has defined military readiness activities as all training and operations of the U.S. Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use (16 U.S.C. § 703 note). As directed by Section 315 of the National Defense Authorization Act, the USFWS issued a final rule authorizing incidental take, with limitations, that result from military readiness activities of the Armed Forces (72 FR 8931 [February 28, 2007]). The final rule authorizing the DoD to take migratory birds in such cases includes a requirement that the Armed Forces must confer and cooperate with USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the proposed action if the action is likely to result in a significant adverse effect on the sustainability of a population of a migratory bird species (50 CFR § 21.42).

National Marine Sanctuaries Act

Each national marine sanctuary has its own set of regulations within subparts of 15 CFR § 922. Subparts A through E contain regulations that apply to all sanctuaries and subparts F through W each contain sanctuary-specific regulations. While each sanctuary has its own unique set of regulations, there are some regulatory prohibitions that are typical for many sanctuaries including prohibitions on discharging material or other matter into the sanctuary; disturbance of, construction on, or alteration of the seabed; disturbance of cultural resources; and exploring for, developing, or producing oil, gas, or minerals. In addition, some sanctuaries prohibit other activities, such as the disturbance of marine mammals, seabirds and sea turtles, operation of aircraft in certain zones, use of personal watercraft, mineral mining, and anchoring of vessels. If a federal agency finds that a proposed action is likely to injure sanctuary resources, the agency is required to submit a “written statement” to the Office of National Marine Sanctuaries describing the potential effects of the activity on sanctuary resources and must consult with the National Oceanic and Atmospheric Administration on activities that trigger the need to consult.

National Monuments

Marine national monuments are designated by Presidential Proclamation via the Antiquities Act of 1906 (54 U.S.C. § 320301 et seq.). U.S. Marine National Monuments are designated within

U.S. exclusive economic zones. These areas have prohibitions on injuring, disturbing, or damaging monument resources, including biological resources. There are also prohibitions on placing or abandoning any structure, material, or other matter on the submerged lands. However, activities and exercises of the U.S. Armed Forces are exempt from these national monument prohibitions.

Other Biological Resource-Related Executive Orders

This Supplemental EA/OEA also evaluates the effects of the action on biological resources as required by EO 13112, *Invasive Species*; EO 13089, *Coral Reef Protection*; and EO 13158, *Marine Protected Areas*.

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At Meck Islet and elsewhere within Kwajalein Atoll or RMI waters only, the evaluation of biological resources follows regulatory requirements set forth in the UES (USASMDC 2024). Under the UES, any action carried out at USAKA must be reviewed to determine if the action may affect UES-protected species or habitats. An action which may affect special-status biological resources at USAKA requires coordination and/or consultation with UES Appropriate Agencies as specified in UES § 3-4. Under the UES, any species listed, proposed for listing, or candidates for designation under the U.S. ESA are considered consultation species in UES Appendix 3-4A. Therefore, any species newly proposed for listing under the ESA would be subject to consultation requirements of UES § 3-4.5. Similarly, the RMI may designate critical habitats which would be listed in UES Appendix 3-4B, and potential effects on those critical habitats would need to be considered at the time of designation. Under UES § 2-18.3.1, a DEP is required for an action or activities for which a biological opinion has been rendered, or that would have a significant effect on wildlife species or habitats or involve migratory bird takings.

B.4 Cultural Resources

B.4.1 Definition of Resource

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

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

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

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

Architectural resources are elements of the built environment consisting of standing buildings or structures such as dams, bridges, lighthouses, forts, and others.

B.4.2 Regulatory Setting

B.4.2.1 San Nicolas Island, Point Mugu Sea Range

Cultural resources on SNI and Point Mugu Sea Range (PMSR), including both archaeological and architectural resources, are protected by a variety of laws and their implementing regulations: the Antiquities Act of 1906; the National Historic Preservation Act (NHPA) of 1966, as amended in 2016; the Archeological and Historic Preservation Act of 1974; the Archaeological Resources Protection Act of 1979; the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA); the American Indian Religious Freedom Act of 1978; the Abandoned Shipwrecks Act of 1988; and the Sunken Military Craft Act of 2004. "Historic properties" are a subset of cultural resources that are defined in the NHPA (54 U.S.C. § 300308) as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property or resource.

Section 106 of the NHPA, currently codified in 54 U.S.C. § 306108, requires federal agencies to consider the effects of their actions on historic properties. The regulations implementing Section 106 of the NHPA (36 CFR § 800) specify a consultation process to assist in satisfying this requirement, including efforts to identify and assess effects to historic properties. For the Proposed Action, consultation with the California State Historic Preservation Officer, the Advisory Council on Historic Preservation (ACHP), Indian tribes, the public, and other interested parties is required by Section 106 of the NHPA. The Commander, Navy Installations Command and Navy Region Southwest would be the lead agencies for all consultations occurring on SNI. For purposes of this document, Indian tribe means an Indian tribe, band, nation, or other organized group or community, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians (36 CFR § 800.16[m]). Consultation with Indian tribes is conducted on a government-to-government basis with federally recognized tribes, as reaffirmed by EO 13175, *Consultation and Coordination with Indian Tribal Governments*.

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

Procedures for identifying and protecting terrestrial cultural resources have been developed for SNI as described in the Integrated Cultural Resources Management Plan (ICRMP) (Gold et al. 2019). The SNI ICRMP also contains guidance and standard operating procedures for complying with the NHPA and NAGPRA. According to the ICRMP, Naval Base Ventura County (NBVC) is working to establish a programmatic agreement with ACHP and the California State Historic Preservation Officer for SNI.

Additional regulations and guidelines for submerged historic resources include 10 U.S.C. § 113, Title XIV for the Sunken Military Craft Act; the Abandoned Shipwreck Act Guidelines prepared

by the National Park Service (National Park Service 2018); and, for the purposes of conducting research or recovering Navy ship and aircraft wrecks, the Guidelines for Archaeological Research Permit Applications on Ship and Aircraft Wrecks under the Jurisdiction of the Department of the Navy (36 CFR § 767) and overseen by the Naval History and Heritage Command. The Sunken Military Craft Act does not apply to actions taken by, or at the direction of, the United States. In accordance with the Abandoned Shipwrecks Act of 1988, abandoned shipwrecks in state waters are considered the property of the U.S. Government if the shipwreck meets the criteria for inclusion in the NRHP.

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

B.4.2.2 Wake Island

Cultural resources on Wake Island are protected by the same federal laws and regulations as those mentioned above for SNI, as well as DoD and Air Force policies and requirements. Specific legal requirements are identified in applicable sections of the Wake Island ICRMP (PRSC 2020), the Cultural Resources Management Playbook, the Air Force electronic dashboard (eDASH) Cultural Resources Home Page, and the eDASH Air Force Legal Operations Agency Legal and Other Requirements List.

Wake Atoll is a U.S. territory, one of the Minor Outlying Islands, and is nominally under the jurisdiction of the Department of the Interior's Office of Insular Affairs. The Department of the Interior has delegated all administrative and civil authority for Wake Atoll, including its territorial waters, to the Air Force. The Air Force installation that encompasses Wake Atoll is known as Wake Island Airfield (WIA). Since there is no state or territorial government, U.S. statutes, the Wake Island Code (36 CFR § 93), and Air Force policy directives apply. The 611th Civil Engineer Squadron (611 CES/CEIE) at Joint Base Elmendorf-Richardson (JBER), AK, manages environmental compliance for Wake Island Airfield.

The NHPA is the comprehensive law that creates a framework for managing cultural resources in the United States and its territories. The law expanded the NRHP; established ACHP; and provides mandates for federal agencies. Section 106 of the NHPA directs all federal agencies to take into account the effects of their undertakings (actions and authorizations) on cultural resources included in or eligible for the NRHP ("historic properties"). For actions at Wake Atoll, consultation with the Alaska Office of History and Archaeology (which acts in place of a State Historic Preservation Office for Wake Atoll), the ACHP, the public, and other interested parties is required by Section 106 of the NHPA. Section 106 of the Act is implemented by regulations of ACHP (36 CFR § 800). As with almost all cultural resource management activities on Wake Atoll, special provisions of the NHPA apply because Wake Atoll lies entirely within a designated National Historic Landmark (NHL). Section 110(f) of the Act requires that agencies

undertake such planning and actions as may be necessary to minimize harm to any NHL that may be directly and adversely affected by an undertaking.

DoD Instruction 4715.3, Environmental Conservation Program, Section 3a, requires that "cultural resources under the control of the Department of Defense shall be identified, protected, curated, and interpreted through a comprehensive program that complies with legally mandated requirements and results in sound and responsible cultural resources stewardship." Air Force Policy Directive 32–70, Environmental Quality, requires the Air Force to manage responsibly the cultural resources it holds in public trust. Air Force Instruction (AFI) 32–7065, Cultural Resources Management Program (2004), provides guidelines for inventorying, evaluating, and managing cultural resources under Air Force stewardship, and for taking cultural resources into account in the Air Force's Environmental Impact Analysis Process. The practices and procedures outlined in this section comply with these directives and instructions.

WIA cultural resources management objectives, in accordance with federal laws and associated regulations, include the responsibility for the identification, evaluation, and protection of all historic properties on lands under Pacific Air Forces Regional Support Center Detachment 1 control. Historic properties on Wake Atoll include historic real property, historic personal property, and historical records. Historic real property includes buildings, structures, shipwrecks, historic districts, landscapes, archaeological resources, and aircraft. Historic personal property includes military equipment and movable objects. Historic records include photographs, drawings, films, oral histories, and documents.

Because there is no indigenous population on Wake Atoll, NAGPRA and the American Indian Religious Freedom Act do not apply. The American Indian Religious Freedom Act (42 U.S.C. 1996) applies to American Indians, Eskimos, Aleuts, and Native Hawaiians. Amendments to the law define "Indian Tribe" as "an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist." Title 25 of U.S.C. § 479a requires the Secretary of the Interior to publish a list of recognized tribes in the FR. The most recent list (78 FR 26384-26389) is confined to Native American tribes in the contiguous 48 states and Alaska.

B.4.2.3 Meck Islet, Kwajalein Atoll

Regulations regarding the protection of cultural resources on Meck Island and the Kwajalein Atoll are outlined in the Historic Preservation Plan (HPP) for United States Army Kwajalein Atoll (USAKA Environmental Office 2006) and the DEP for Protection of Cultural Resources (USAG-KA 2022).

In addition to NEPA, which was specifically made applicable to United States activities at USAKA by the Compact of Free Association, 15 U.S. federal statutes form the basis of the UES. Appropriate provisions of the RMI statutes and regulations were also considered. The NHPA of 1966, as amended in 2016; the Archeological and Historic Preservation Act of 1974; and the Archaeological Resources Protection Act of 1979 pertain to the protection and preservation of cultural resources, the substantive provisions of which were incorporated into the UES in abbreviated and simplified form. Therefore, the UES, and not the statutes from which they were derived, are the operative law at USAKA. Specific provisions of the U.S. statutes and regulations are applicable only as specifically provided in the UES. The UES standards for cultural resources are comparable to the requirements of the NHPA and the Archeological and Historic Preservation Act. In situations where the UES may be silent on how to comply with cultural

resource requirements, the HPP relies on existing U.S. standards and guidelines for detailed compliance information.

UES § 3-7 establishes standards for identifying, assessing the significance of, mitigating adverse effects on, and preserving the archaeological, cultural, and historical resources of USAKA. The UES and Marshallese law uses two sets of criteria to determine if a prehistoric or historic site is eligible for listing on the RMI NRHP. The first is cultural and historic value, and the second establishes classifications for evaluating the significance of prehistoric and historic sites. All traditional sites are considered significant under these criteria. Known traditional sites on Kwajalein Atoll include cemeteries, fish traps, taro gardens, or areas associated with mythological or traditional historical figures. Additionally, the Republic of the Marshall Islands Cultural and Historic Preservation Office (RMICHPO) does not recognize the Missile Defense Cold War context as significant; therefore, there are no Cold War era properties at USAKA that are eligible for the RMI NRHP.

Per UES § 3-7.4.1, USAKA is also required to prepare an HPP using Army regulations as a guide. The HPP presents the USAKA Garrison Commander's detailed policies for complying with the requirements of the UES and Army Regulation 200-4 (Cultural Resources Management). The RMICHPO was established by the RMI Historic Preservation Act (Public Law 1991-111), amended in 2022, and exercises the function of a State Historic Preservation Officer. Formal consultation between USAKA and the RMICHPO is conducted through the RMI Environmental Protection Authority. In addition, the RMI ACHP reviews all actions at USAKA requiring consultation (UES § 3-7.3). Specific procedures are described in Section 3.2 of the HPP.

According to Section 1.9 of the HPP, a project, activity, or program is not considered an undertaking and is exempt from consultation if ground disturbing activities would take place in areas where significant ground disturbance has already occurred, are in areas of the islands that were created by dredging and filling after 1944, are in areas determined to be non-sensitive, or are for routine maintenance activities. All projects, activities, or programs, regardless of whether they are considered an undertaking, must be coordinated with the USAKA Environmental Office. Files pertaining to the project, activity, or program must be provided to the RMICHPO after completion. Such files would include field notes and the resulting field report; photographs of the project site; monitoring plan, when required; NEPA documentation, if required; and any notifications of discovery. The Garrison Commander determines whether a project, an activity, or a program is an undertaking. The Commander will also seek review and comment on the undertaking from the RMICHPO.

Army Regulation 200-4 ensures that Army installations make informed decisions regarding cultural resources under their control, in compliance with public laws, in support of the military mission, and consistent with sound principles of cultural resources management. Army Regulation 200-4 provides standards for the treatment of historic properties on land controlled or used by the Army, and steps for locating, identifying, evaluating, and treating historic properties in compliance with the NHPA, Archaeological Resources Protection Act, and NEPA. Because of the unique nature of the relationship between the Army and the RMI, many of the requirements of Army Regulation 200-4 have no effect on the management of cultural resources at USAKA.

A Programmatic Agreement among the USASMDC, USAKA, the U.S. ACHP, and the RMICHPO was prepared and signed in 1994. The Programmatic Agreement was prepared with

full recognition of the requirements in the UES, and it contains the elements and stipulations for cultural resources protection under the Standards. The Programmatic Agreement is superseded by the DEP. The DEP is a procedural mechanism that provides a forum for USAKA, U.S. Government agencies, and the RMI Environmental Protection Authority to review and comment on activities proposed by USAKA that have the potential to affect the USAKA environment. The DEP also provides guidelines for cultural resource protection during ongoing operations, maintenance, and mission activities occurring at USAKA. Project-specific DEPs are also required for activities that may have an effect on cultural resources.

B.5 Geology and Soils

B.5.1 Definition of Resource

Geological resources are defined as physical characteristics and composition of surface and subsurface materials, including consolidated and unconsolidated sediments. This includes geological features in the nearshore environment.

B.5.2 Regulatory Setting

B.5.2.1 San Nicolas Island, Point Mugu Sea Range

For SNI, specific guidance and management procedure for naval operations occurring within PMSR are found in the NBVC Integrated Natural Resources Management Plan (NBVC 2015). Federal agencies must manage lands to control and prevent soil erosion and preserve natural resources by conducting surveys and implementing soil conservation measures. The Clean Water Act (CWA) regulates activities that may affect sediment transport and coastal erosion. Hazardous waste that could affect geological resources is governed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The CAA also restricts particulate matter emissions that result from soil disturbance. The Naval Base Ventura County (NBVC) Instruction 11010.1B establishes protocol and implementation of best management practices that minimize impacts to soil resources that may result from activities related to the military mission at SNI (NBVC 2015). Collectively these regulations ensure geological resources are responsibly managed and safeguarded at SNI.

B.5.2.2 Wake Island

Geological resources at Wake Island are regulated by federal and DoD regulations. The CWA regulates activities that may affect sediment transport and coastal erosion. Hazardous waste that could affect geological resources is governed by CERCLA. The Air Force implements these regulations and AFI 32-7064, which establish protocols for managing soil erosion, land use, and geological resource protection as part of Integrated Natural Resources Management Plans (PRSC 2023a). These regulations collectively ensure that geological resources are responsibly managed and safeguarded at Wake Island.

B.5.2.3 Meck Islet, Kwajalein Atoll

The UES § 3-6 (USASMDC 2024) contains the standards for Materials and Waste Management which detail performance standards for characterization of waste (UES § 3-6.5.6) and restoration (UES § 3-6.5.8) which relate to soil sampling and quality standards. These UES sections contain requirements and procedures for soil site investigations and data evaluation to identify sites with potential contamination or unacceptable risk (UES § 3-6.5.8(k) and (l)) to the environment and human health. The UES standards and procedures include screening criteria to be used to

characterize the risks posed to public health, safety, and the atoll-specific environment (UES § 3-6.5.8(l)(2)).

B.6 Hazardous Materials and Waste Management

B.6.1 Definition of Resource

Hazardous materials, hazardous waste, and the management of these substances were defined within the JFC EA/OEA completed in 2022 (Navy and Army 2022) and the JFC Supplemental EA/OEA completed in 2024 (Navy and Army 2024).

As outlined in the JFC EA/OEA and first Supplemental EA/OEA, hazardous material is defined by 49 CFR § 171.8 as a substance or material "capable of posing an unreasonable risk to health, safety, and property when transported in commerce" as determined by the Secretary of Transportation. These materials include "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR § 173." In general, they include substances that, because of their quantity, concentration, or characteristics (e.g., physical, chemical, infectious), may present a danger to public health and/or the environment if released.

CERCLA Section 101(14) (42 U.S.C. § 9601(14)) defines "hazardous substances" as those designated under several federal environmental statutes, including:

- Hazardous wastes listed or exhibiting characteristics under Section 3001 of the Solid Waste Disposal Act (codified under the Resource Conservation and Recovery Act [RCRA]) (40 CFR § 261, Subpart D);
- Toxic pollutants and hazardous substances listed under Section 311(b)(2)(A) of the CWA (33 U.S.C. § 1321; 40 CFR § 116);
- HAPs listed under Section 112 of the CAA (42 U.S.C. § 7412);
- Imminently hazardous chemical substances or mixtures under Section 7 of the Toxic Substances Control Act (TSCA) (15 U.S.C. § 2606); and
- Any element, compound, mixture, solution, or substance designated by the USEPA Administrator under CERCLA Section 102(a) (42 U.S.C. § 9602(a)).

The USEPA maintains a list of CERCLA hazardous substances in 40 CFR § 302.4, Table 302.4, including reportable quantities for releases. Petroleum and natural gas are explicitly excluded from this definition, though there are exceptions and regulatory requirements under the Oil Pollution Act, CWA, and state and local laws that prohibit discharges of oil into the environment. Releases include spilling, leaking, dumping, or disposing into the environment (CERCLA Section 101(22)).

RCRA defines hazardous waste as a "solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Under the authority of 42 U.S.C. § 6921, the USEPA defines Small Quantity Generators as those generating more than 100 kilograms (kg) but less than 1,000 kg of non-acute (e.g., not highly

toxic or capable of causing serious harm or death at low doses) hazardous waste per calendar month (40 CFR § 262.13), while Large Quantity Generators are those generating 1,000 kg or more of non-acute hazardous waste per month, with both categories subject to distinct accumulation, reporting, and management requirements detailed in 40 CFR §§ 262.16 and 262.17, respectively.

Under RCRA (40 CFR § 266 subpart M), regulations are also established that specify when military munitions may be classified as solid and hazardous wastes. Military munitions may be defined as solid waste when they have been used, recovered, collected, and/or transported off range or from the site of use (40 CFR § 266.202). A set of criteria and standards have also been established that are applicable to the storage, transportation, treatment, and disposal of any items deemed to be waste military munitions (40 CFR § 266.206).

B.6.2 Regulatory Setting

In accordance with CERCLA, RCRA, TSCA, CWA, and CAA, hazardous materials handling, storage, and disposal are federally regulated by the USEPA. The Hazardous Materials Transportation Act gives the Department of Transportation (DOT) authority to regulate the transportation of hazardous materials via Hazardous Materials Regulations (49 CFR § 171). Special management provisions may apply to certain types of hazardous waste to ease management burden and facilitate recycling of these materials. Associated regulatory requirements for these "universal wastes" are specified in 40 CFR § 273. Substances that may pose a risk to human health are defined as "special hazards" (e.g., asbestos, polychlorinated biphenyls, lead-based paint) and are addressed separately from other hazardous substances. The TCSA gives USEPA authority to regulate special hazard substances, while asbestos is also regulated by the USEPA under the CAA and CERCLA.

The Defense Environmental Restoration Program was established to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation Restoration Program and the Military Munitions Response Program are components of the Defense Environmental Restoration Program. The Installation Restoration Program requires each installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Military Munitions Response Program addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination. The Environmental Restoration Program is the Navy's initiative to address Defense Environmental Restoration Program requirements.

B.6.2.1 San Nicolas Island, Point Mugu Sea Range

The storage, use, and disposal of hazardous materials and wastes under the Proposed Action are regulated by federal guidance including the Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 116 et seq.), also known as the Superfund Amendments and Reauthorization Act of 1986 Title III. Navy policy is to comply with Emergency Planning and Community Right-to-Know Act and to encourage compliance with state and local Emergency Planning and Community Right-to-Know Act programs to the extent that resources allow and where such compliance does not interfere with command mission accomplishment or other legal obligations. Navy operations ashore and afloat must also comply with Navy policies and procedures regarding hazardous materials/waste management, pollution prevention, and recycling as specified in OPNAVINST M-5090.1.

As part of PMSR and managed by U.S. Naval Base Point Mugu, SNI operates under a Hazardous Waste Management Plan that provides guidance and direction for the use, storage, and compliance activities for hazardous materials and wastes (Navy 2022, Navy 2014). Further, the lifecycle of hazardous materials at U.S. Naval Base Point Mugu is managed via the Navy's Consolidated Hazardous Materials Reutilization and Inventory Management Program (Navy and Army 2022). Naval Base Ventura County (NBVC) Point Mugu is considered a Large Quantity Generator of hazardous waste and operates under RCRA EPA Handler IDs CA7170090206 [SNI] and CA9170027271 [Point Mugu]) (USEPA 2025a).

B.6.2.2 Wake Island

Hazardous materials and waste management at Wake Island must follow all federal environmental statutes and regulations previously noted, and specifically RCRA Subtitle C for hazardous waste management as there is no authorized state program.

Compliant with DoD (DoDI 4715.23) and Air Force (Air Force Manual [AFMAN] 32-7000 series) directives, WIA implements solid and hazardous waste management programs. The WIA Solid Waste Management Action Plan outlines current solid waste disposal and management practices (DAF 2024b). The WIA is considered a Large Quantity Generator of hazardous waste and operates under RCRA Permit TTD987866035 (USEPA 2025a). WIA implements a Hazardous Waste Management Plan that guides management of hazardous waste, as well as release prevention and planning (USAF 2023). Further, WIA maintains a Spill Prevention, Control, and Countermeasure (SPCC) Plan that specifies procedures that should be followed to prevent and respond to an oil spill (USAF 2021).

Satellite accumulation areas are located on WIA, including one site designated as a 90-day accumulation point for hazardous waste prior to shipping off the island by permitted waste haulers (USAF 2023, DAF 2024b).

B.6.2.3 Meck Islet, Kwajalein Atoll

Since Meck Islet is located at USAKA, activities at this location involving hazardous materials and waste management must follow the regulatory requirements outlined in the UES (USASMDC 2024). The standards defined for material and waste management at USAKA (UES § 3-6) are derived from U.S. statutes and regulations (e.g., RCRA, CERCLA, TSCA, CWA), as well as regulations of the Republic of the Marshall Islands Environmental Protection Authority, that address the use and management of hazardous material and waste (UES § 1-5.8). The UES classifies all materials as either General-Use Materials, Hazardous Materials and Petroleum Products, or Prohibited Materials (UES § 3-6.5.1).

A Hazardous Materials Management Plan is required prior to importing hazardous materials or petroleum products into USAKA. Once the materials are identified and classified at USAKA, they are subject to additional requirements for security, storage, and inspection. In accordance with the UES, USAG-KA has prepared a Kwajalein Environmental Emergency Plan (KEEP) as a contingency plan for responding to releases of oil, hazardous materials, pollutants, and contaminants to the environment. The KEEP is similar to an SPCC plan, but it incorporates response provisions of a National Contingency Plan. The Hazardous Materials Management Plan and an inventory of all hazardous materials, waste, and petroleum products are incorporated into the KEEP.

The UES also includes a process for evaluating and, when called for, remediating sites contaminated from releases. Waste on USAKA is classified as either solid waste, hazardous waste, or waste that requires special handling. All solid waste is considered hazardous waste until it is determined not hazardous (UES § 3-6.5.6). All hazardous and regulated wastes are shipped off USAKA for disposal; it may be accumulated and stored for up to 90 days, with possible extensions up to 120 days. Several protective measures are in place under the UES, including development of a DEP for actions that might have adverse environmental effects. Hazardous materials and waste disposal Each program-specific DEP summarizes procedures to monitor and mitigate potential impacts of testing activities at USAG-KA controlled islets and in RMI territorial waters.

B.6.2.4 Broad Ocean Area

Refer to JFC Supplemental EA/OEA Appendix D, Section D.3.3, Pages D-11 through D-13 for a description of hazardous materials and waste management in the BOA, with specific focus on the Pacific Ocean (Navy and Army 2022). Regulatory requirements for hazardous materials and waste management in the Pacific and Atlantic BOAs include all federal environmental statutes and regulations previously noted, which include CERCLA (42 U.S.C. § 9601 et seq), CWA (42 U.S.C. § 7401 et seq.), CAA (33 U.S.C. § 1251 et seq.), RCRA (42 U.S.C. § 6901 et seq.), TSCA (15 U.S.C. § 2601 et seq.), Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 116 et seq.), and Hazardous Materials Transportation Act (49 U.S.C. § 5101 et seq.). Under these laws, the USEPA and DOT have the responsibility of defining hazardous materials and waste as well as regulating the use, discharge, storage, transportation, disposal, and cleanup of these substances. Navy operations ashore and afloat must comply with Navy policies and procedures regarding hazardous materials, waste management, pollution prevention, and recycling as specified in OPNAVINST M-5090.1.

B.7 Health and Safety

B.7.1 Definition of Resource

Refer to JFC EA/OEA Section 3.1.3, Pages 3-15 through 3-16 for an in-depth description of the importance of health and safety of the public and personnel (Navy and Army 2022). Health and safety topics can include missile flight safety, ground safety, ordnance management and safety, ocean area clearance, transportation safety, and fire and crash safety.

B.7.2 Regulatory Setting

The primary legal framework for occupational health and safety in the United States is the Occupational Safety and Health Act of 1970, which aims to assure safe and healthful working conditions for employees. The Occupational Safety and Health Act authorizes enforcement of safety standards and promotes training in occupational safety. Employers are required to provide workplaces free from hazards such as toxic substances, excessive noise, mechanical dangers, and other risks that could cause serious harm or death, and employees must comply with safety standards applicable to their conduct.

The Occupational Safety and Health Administration (OSHA), under the Department of Labor, administers these standards and enforces workplace safety regulations (29 CFR 1910). OSHA standards specify methods employers must use to protect employees and classify hazards, supporting widespread compliance. While federal OSHA regulations govern most private industry workplaces, some states operate OSHA-approved state plans with their own safety

standards, which must be at least as effective as federal ones. OSHA regulations do not cover military personnel or specific military equipment, systems, or operations. This exclusion is mandated by Presidential EO 12196 and DoD policies. OSHA standards, however, partially apply on military installations for civilian workers and specific tasks, but military personnel and military operations have separate, military-specific safety regulations that provide similar or greater protection.

The USEPA and U.S. DOT also hold responsibility for protecting public health and safety via federal laws including CERCLA (42 U.S.C. § 9601 et seq), CWA (42 U.S.C. § 7401 et seq.), CAA (33 U.S.C. § 1251 et seq.), RCRA (42 U.S.C. § 6901 et seq.), TSCA (15 U.S.C. § 2601 et seq.), Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 116 et seq.), and Hazardous Materials Transportation Act (49 U.S.C. § 5101 et seq.).

B.7.2.1 San Nicolas Island, Point Mugu Sea Range

For SNI, specific guidance, safety policies, and procedures for naval operations occurring within PMSR are found in Naval Air Systems Command Instruction 3700.3, Range Safety Policy. This document defines range safety requirements, criteria, the safety planning process, and operational procedures. Although the Commander of Naval Air Warfare Center Weapons Division has the ultimate responsibility for range safety, the authority for execution of these safety programs is delegated to the PMSR Safety Officer in the Range Safety Office (Navy 2022).

The Navy's safety protocols, as outlined in OPNAVINST 5100.23 *Navy Safety and Occupational Health Program Manual* (5 June 2020), ensure compliance with occupational health standards. In addition, the Naval Sea Systems Command's NAVSEA OP-5, *Ammunition and Explosives Safety Ashore,* is a key Navy manual that provides standardized policies, procedures, and criteria for the safe handling, storage, transportation, and management of ammunition, explosives, and related hazardous materials at shore-based facilities. The manual is designed to minimize risks of accidental detonation, fire, or other hazards while ensuring operational readiness. It applies to all Navy activities and integrates with broader explosives safety programs.

B.7.2.2 Wake Island

Wake Island, administered by the Air Force, operates under a unique regulatory framework governed by the Wake Island Code (32 CFR § 935). This code delegates broad authority to the Wake Island Commander to enforce health and safety measures, including prohibiting activities that endanger persons or property, issuing traffic regulations, and directing emergency responses. The island falls under direct federal jurisdiction, with OSHA serving as the primary regulator for occupational safety and health. The Air Force integrates these federal mandates into its operations via the Air Force Occupational Safety, Fire, and Health (AFOSH) program, which supplements OSHA with military-specific requirements for a safe working environment. AFOSH emphasizes risk management, training, and inspections to prevent injuries, illnesses, and resource loss, applying uniformly to military and civilian personnel on the island.

The AFOSH program, outlined in Air Force Instruction 91-301, establishes a comprehensive system to minimize occupational deaths, injuries, and illnesses by integrating OSHA standards with Air Force-specific policies. Several specified manuals and instructions form the AFOSH program. AFMAN 91-201 (Explosive Safety Standards) implements DoD 6055.09-STD and Air Force Policy Directive (AFPD) 91-2, serving as the central reference for handling explosives at Air Force facilities, including storage, transport, and disposal. AFMAN 91-203 (Air Force

Occupational Safety, Fire, and Health Standards) provides detailed criteria for general workplace safety, fire prevention, and health protections not fully covered by federal rules. Air Force Instruction 91-202 (Mishap Prevention Program) outlines the overarching framework for preventing mishaps across operations. AFMAN 32-3001 (Explosive Ordnance Disposal [EOD] Program) details requirements for rendering safe unexploded ordnance.

B.7.2.3 Meck Islet, Kwajalein Atoll

The UES, alongside USAG-KA and Ronald Reagan Space and Missile Test Range (RTR) range safety procedures, ensures human health and safety during mission operations on USAG-KA and RTR-controlled islets, including Meck Islet. It incorporates Army and DoD health and safety policies through USAKA-wide standards. Key regulations include DoD directives and Army regulations on explosives safety, occupational health, and range safety, such as:

- DoD Directive 6055.09E, Explosives Safety Management (2019)
- DoD Instruction 4540.01, Use of International Airspace by U.S. Military Aircraft and for Missile and Projectile Firings (2017)
- DoD Instruction 6055.01, DoD Safety and Occupational Health Program (2014)
- DoD Instruction 6055.05, Occupational and Environmental Health (2018)
- DoD Instruction 6055.07, Mishap Notification, Investigation, Reporting, and Record Keeping (2018)
- Army Regulation 385-10, The Army Safety Program (2017)
- Army Regulation 385-63, Range Safety (2012)

RTR flight test missions must follow standard and mission-specific safety procedures, overseen by the RTR Safety Office and guided by Range Commanders Council policies (RCC 2023). Standard procedures followed for RTR missions include:

- United States Space Force Space Systems Command Manual 91-710
- Army Regulation 385-40, Accident Reporting and Records
- Department of the Army Pamphlet 385-30, Safety Risk Management
- Delegation of Ronald Reagan Ballistic Missile Test Site Range Safety Policy and Waiver Approval Memorandum, May 2016
- DoD Manual 6055.09-M, Ammunition and Explosive Safety Standards
- Department of the Army Pamphlet 385-64, Ammunition and Explosive Safety Standards
- Range Commanders Council Standard-319, Flight Termination Systems Commonality Standard (latest revision)
- Range Commanders Council Standard-321, Common Risk Criteria Standards for National Test Ranges (latest revision)
- Range Commanders Council Standard-324, Global Positioning and Inertial
- Measurements Range Safety Tracking Systems Commonality Standard (latest revision)

Beyond human health and safety protection, standards and policies (Range Commanders Council Standard 321-23) also protect critical assets, infrastructure, and the environment to prevent risks to public safety and mission assurance, with hazards mitigated accordingly (RCC 2023).

B.7.2.4 Broad Ocean Area

Refer to the JFC EA/OEA completed in 2022 (Navy and Army 2022) and the JFC Supplemental EA/OEA completed in 2024 (Navy and Army 2024) for details regarding elements of health and safety of the public and personnel during military activities in the BOA. Previously discussed policies and procedures surrounding the topics of missile flight safety, ordnance management and safety, ocean area clearance, transportation safety, and fire and crash safety all apply to activities in the BOA for the Proposed Action.

B.8 Water Resources

B.8.1 Definition of Resource

Water resources include surface water, groundwater, water quality, and nearshore marine environments that may be affected by a proposed action.

Under the CWA, the Waters of the United States (WOTUS), including the territorial seas, are defined as (1) traditional navigable waters – rivers lakes and seas used in interstate or foreign commerce, (2) wetlands adjacent to navigable waters – those with continuous surface connection to navigable water, (3) non navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries, as defined within Section 404. WOTUS are regulated by the USEPA and the U.S. Army Corps of Engineers (USEPA 2025b).

B.8.2 Regulatory Setting

B.8.2.1 San Nicolas Island, Point Mugu Sea Range

Water quality and quantity is regulated under several statutes and regulations, including the Safe Drinking Water Act, the CWA, and the National Pollutant Discharge Elimination System (NPDES).

The Safe Drinking Water Act is a federal law that protects public drinking water supplies throughout the nation. Under this Act, the USEPA sets standards for drinking water quality.

The CWA establishes federal limits on the discharge of specific pollutants into surface waters through the NPDES program, aiming to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The NPDES program regulates both point sources (e.g., discharge from pipes) and nonpoint sources (e.g., stormwater runoff). Under Section 401 of the CWA, states are required to certify that any federally permitted activity, such as those authorized by the U.S. Army Corps of Engineers, complies with state water quality standards. In California, the State Water Resources Control Board and the appropriate Regional Water Quality Control Board are responsible for issuing Section 401 water quality certifications. These certifications ensure that discharges associated with federally permitted activities meet all applicable state water quality requirements.

Under California's NPDES stormwater program, construction site operators involved in clearing, grading, or excavation activities that disturb one acre or more are required to obtain coverage under the NPDES Construction General Permit for stormwater discharges. Projects requiring an individual permit must also submit a Notice of Intent to discharge stormwater and develop a Stormwater Pollution Prevention Plan, which must be implemented throughout the construction period. In accordance with the 2010 Final Rule of the Clean Water Act titled *Effluent Limitations*

Guidelines and Standards for the Construction and Development Point Source Category permit holders must apply non-numeric best management practices, including erosion and sediment controls and pollution prevention measures, to minimize water quality impacts.

B.8.2.2 Wake Island

Water resources at Wake Island are regulated by federal and DoD regulations. The CWA regulates activities that may affect point source discharge to WOTUS. The Air Force implements these regulations and AFI 32-7064, which establish protocols for managing sensitive aquatic systems as part of Integrated Natural Resources Management Plans (PRSC 2023a). The 611 CES/CEIE maintains a NPDES permit with an associated Stormwater Pollution Prevention Management Plan. That are used to help minimize point and non-point source pollution issues (PRSC 2023a). These regulations collectively ensure that groundwater resources and marine ecosystems are responsibly managed and safeguarded during the Proposed Action.

B.8.2.3 Meck Islet, Kwajalein Atoll

The Kwajalein Atoll region of influence occurs within the RMI. As such, the evaluation of water resources follows regulatory requirements set forth in EO 12114, *Environmental Effects Abroad of Major Federal Actions*, as well as those outlined in the UES as described below.

The UES and its procedures apply to all activities of the U.S. Government that occur on the USAG-KA/RTR controlled islands, the Mid-Atoll Corridor, as well as all USAG-KA/RTR controlled activities within the RMI, including the territorial waters of the RMI (USASMDC 2024). For UES standards regarding water quality and reef protection see UES §§ 1-5.4 and 3-2.

B.9 Cumulative Effects

B.9.1 Definition of Cumulative Effects

The approach taken in the analysis of cumulative effects follows the objectives of NEPA and Council on Environmental Quality guidance. Cumulative effects are defined as effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. Current USEPA guidance states that cumulative effect analyses should "characterize the combined effects from exposures to both chemical and non-chemical stressors over time across the affected population group or community" (USEPA 2022).

Cumulative effects are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action would be expected to have more potential for a relationship—and therefore a higher potential for cumulative effects—than those more geographically separated. Cumulative effects might be purely additive or may be interactive (when effects of an action change in type or magnitude depending on other actions or variables such that the combined effects would be greater than simply adding the effects). To identify cumulative effects, the analysis needs to address the following three questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

For the resource areas evaluated in detail in this EA/OEA, cumulative effects sections of **Chapter 3.0** evaluate the potential for cumulative effects resulting from the Proposed Action in combination with other past, present, and reasonably foreseeable future actions. For most resources included in these analyses, quantifiable data are not available to evaluate the potential for cumulative effects, and a qualitative analysis approach was undertaken. In addition, for actions where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative effects related to this EA/OEA where possible.

B.9.2 Scope of Cumulative Effects Analysis

To determine the scope of environmental effects, agencies consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact evaluation document.

The scope of analysis for cumulative effects is limited in time to the time period (2022 to 2032) over which JFC flight tests would be conducted and limited geographically to locations where the Proposed Action would occur and where potential effects of the Action may occur.

Another factor influencing the scope of cumulative effects analysis involves identifying other past, present, and reasonably foreseeable actions to consider the interconnection between people and ecosystems at local, regional, and national levels (USEPA 2022). Beyond determining that the geographic scope and time frame for the actions interrelate to the Proposed Action, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include EISs, EAs, management plans, land use plans, and other planning related studies. A list of documents used to establish past, present, and foreseeable future actions used in cumulative effects analyses in this EA/OEA can be found in **Table 4**.

C

Standard Operating Procedures

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Appendix C Acronyms and Abbreviations

Acronym / Abbreviation	Definition
Air Force	United States Department of the Air Force
Army	United States Department of the Army
AUR	All Up Round
BOA	Broad Ocean Area
CEIE	CES Environmental Management
CES	Air Force 611 Civil Engineer Squadron
CFR	Code of Federal Regulations
CRM	Cultural Resources Manager
DPAA	Defense POW/Missing in Action Accounting Agency
DEP	Document of Environmental Protection
DoD	Department of Defense
EIS/OEIS	Environmental Impact Statement / Overseas Environmental Impact Statement
ESA	Endangered Species Act
HCTT	Hawaii-California Training and Testing
JFC	Joint Flight Campaign
KEEP	Kwajalein Environmental Emergency Plan
NAGPRA	Native American Graves Protection and Repatriation Act
Navy	United States Department of the Navy

Acronym / Abbreviation	Definition
NBVC	Naval Base Ventura County
NMFS	National Marine Fisheries Service
NOTAM	Notice to Airmen
NTM	Notice to Mariners
PMSR	Point Mugu Sea Range
RMICHPO	Republic of the Marshall Islands Cultural and Historic Preservation Office
RTR	Ronald Reagan Space and Missile Test Range
SNI	San Nicolas Island
UES	*Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands;* USAKA Environmental Standards
USAG-KA	United States Army Garrison–Kwajalein Atoll
USAKA	United States Army Kwajalein Atoll
WWII	World War II
§	Section, Part

APPENDIX C. STANDARD OPERATING PROCEDURES

C.1 Standard Operating Procedures at SNI

C.1.1 For Protection of Biological Resources at SNI

- Proposed Activities would be implemented consistent with Navy San Nicolas Island (SNI) pinniped haulout mitigation area requirements detailed in the Hawaii-California Training and Testing Environmental Impact Statement / Overseas Environmental Impact Statement (HCTT EIS/EOIS; Navy 2025a), including the following requirements related to 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 1,000 feet.
  - 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 using video and acoustic monitoring of up to three pinniped haulout areas and rookeries during launch events that include missiles or targets that have not been previously monitored for at least three launch events.
  - Launch events shall be scheduled to avoid the peak pinniped pupping seasons from January through July, to the maximum extent practicable.
- Transportation of all cargo to SNI would follow requirements and limitations of Naval Base Ventura County (NBVC) Instruction 5090.14B, *Biological Resource Security Requirements for Air and Barge Transport of all Cargo to San Nicolas Island* to include cargo cleaning and inspection.

C.1.2 For Protection of Cultural Resources at SNI

- As established in the Integrated Cultural Resources Management Plans for NBVC Point Mugu and SNI, the Navy will implement standard operating procedures in the case of an unanticipated discovery of cultural materials:
  - The contractor, through the Facilities Engineering Acquisition Division (a component of the Public Works Department at NBVC), or other individual charged with contract execution, will immediately stop work in the vicinity of the discovery, secure the area, and notify the NBVC Cultural Resources Manager.
  - The NBVC Cultural Resources Manager will notify the Public Works Officer, State Historic Preservation Officer, Tribes, and other parties as appropriate; notification will include the nature of the discovery, steps being taken in response, and any time constraints, if applicable.
  - The NBVC Cultural Resources Manager will consult with State Historic Properties Officer, Tribes, and other parties as appropriate to determine the appropriate actions.
  - Those resources not meeting National Historic Properties Act eligibility criteria require no further management treatment, except under specific conditions in which construction monitoring has been recommended.
  - If the inadvertent discovery is determined to include human remains, the Naval Criminal Investigative Service will be notified.

  - If the inadvertent discovery is pertinent to the Native American Graves Protection and Repatriation Act (NAGPRA), then it will be handled according to the procedures outlined in 43 CFR 10, or according to procedures outlined in a Comprehensive Agreement or Plan of Action to be developed in consultation with Tribes.
  - No further ground disturbance shall occur within 100 feet of the discovery until consultation, as appropriate, has been completed.
  - If underwater prehistoric archaeological resources are identified, the Navy will consult on any potential findings to develop a standard operating procedure and appropriate mitigation.
- In addition to these standard operating procedures, Project personnel should be briefed during the routine construction briefings and before activities commence at each location regarding the significance of cultural resources and the penalties associated with their disturbance or collection.

C.1.3 For Protection of Geology and Soil at SNI

- To prevent soil erosion and preserve natural resources, any project that may disturb soil must go through a screening process with the Site Approval and Project Review Board (NBVC 2015).
- Best Management Practices to prevent erosion would be implemented for any soil disturbing activity including minimizing and stabilizing site disturbance; protecting slopes and channels; controlling site perimeters; and controlling on-site erosion (NBVC 2015).

C.1.4 For Protection of Hazardous Waste at SNI

- Hazardous materials usage and waste would continue to be managed by Point Mugu Sea Range (PMSR) under existing applicable federal, state, local, and Department of Defense (DoD) requirements. Authorized personnel will follow the existing range transportation safety plan and ordnance storage, handling, and safety plans. The Action Proponents must comply with range management plans for oil and hazardous materials outlined in the range Spill Prevention Control and Countermeasures Plan and existing standard operating procedures.
- Only trained and authorized mission critical personnel would utilize support equipment and material hazards needed to perform the Proposed Action. Vehicle and equipment operators shall require proper certification when moving/hauling the All Up Round (AUR) and any hazardous materials.

C.1.5 For Protection of Health and Safety at SNI

- Notices to Mariners (NTMs) and Notices to Airmen (NOTAMs) would be transmitted to appropriate authorities to clear caution areas of this vessel and air traffic and to inform the public of impending missions. The warning messages would contain information describing the clearance time frame, area affected, and safe alternate routes.

C.2 Standard Operating Procedures at Wake Island

C.2.1 For Protection of Biological Resources at Wake Island

- Proposed Activities would be implemented consistent with the Wake Island Biosecurity Management Plan (PRSC 2015) which includes the following measures to avoid the introduction of invasive species:
  - Cleaning of all equipment and personal gear prior to shipment or transport to Wake Island.
  - Visual inspections of all equipment and other materials would be completed at the point of origin prior to loading materials into containers bound for Wake Atoll. If any evidence of invasive or pest species were discovered on equipment or in containers, the shipment would be decontaminated using U.S. Environmental Protection Agency approved fumigants, power washers, and other tools to ensure the shipment is free of invasive alien species.
  - Biosecurity inspection of and use of pest interception methods on all containers and cargo being sent to Wake Island. If pests are detected in shipments to Wake Island upon arrival, containers would be sealed until the appropriate measures are taken in coordination with installation command and the Air Force 611 Civil Engineer Squadron (CES) biosecurity manager.

C.2.2 For Protection of Cultural Resources at Wake Island

- As established in the Integrated Cultural Resources Management Plan for Wake Island, the Air Force or contractor personnel will implement standard operating procedures in the case of an unanticipated discovery of cultural materials:
  - Cease all construction activity in the vicinity of the discovery/property. If possible, do not remove the discovered artifact or historic property;
  - Take steps to secure the area and protect the discovery/property from further damage. Leave the object in place and take pictures.
  - Notify the 611 CES Environmental (CEIE) representative of the discovery/property. If the discovery/property involves human remains, follow the procedures for handling unanticipated human remains.
  - The 611 CES/CEIE/Cultural Resources Manager (CRM) representative notifies installation commander.
  - The installation commander certifies in writing that he or she has been notified.
  - If the properties must be moved, communicate with the CRM on methods and take lots of pictures.
  - The 611 CES/CEIE/CRM will prepare a treatment plan; and
  - Earth-disturbing activities may be resumed after the treatment plan has been executed (Air Force Instruction [AFI] 32–7065 §3.9.1.6).
- Human remains are occasionally encountered on Wake Atoll. Most of these remains are from participants in the World War II (WWII) battle and subsequent Japanese occupation. If skeletal remains are encountered on the atoll, the following steps should be taken:
  - All work in the immediate vicinity of the find spot shall be halted and the area secured to protect the remains from damage.
  - The installation commander shall be notified.

- The installation commander shall notify Wake Island Airfield Security and the Base Operations Support medical officer.
- The security officer shall seal off the site, including associated artifacts.
- The Base Operations Support medical officer will try to confirm that the remains are human or non-human.
- The remains will be protected in place when the site is secured.
- The installation commander shall notify the 611 CES/CEIE/CRM.
- The 611 CES/CEIE/CRM will notify the Central Identification Laboratory, of the Defense POW/Missing in Action Accounting Agency (DPAA), 310 Worchester Ave., Bldg. 45, Joint Base Pearl Harbor-Hickam, Hawaii, 96853-5530, 886.913.1286-448-1934, or DSN 315-448-1934 or http://www.dpaa.mil/Contact/ContactUs.aspx10. DPAA and the CRM will determine who will recover the remains.
- The remains will be removed by an archaeologist.

- In addition to these standard operating procedures, Project personnel should be briefed during the routine construction briefings and before activities commence at each location regarding the significance of cultural resources and the penalties associated with their disturbance or collection.

C.2.3 For Protection of Hazardous Waste at Wake Island

- Hazardous materials usage and waste would continue to be managed by the Air Force under existing applicable federal, state, local, and DoD requirements. Authorized personnel will follow the existing range transportation safety plan and ordnance storage, handling, and safety plans. The Action Proponents must comply with range management plans for oil and hazardous materials outlined in the range Spill Prevention Control and Countermeasures Plan and existing standard operating procedures.
- Only trained and authorized mission critical personnel would utilize support equipment and material hazards needed to perform the Proposed Action. Vehicle and equipment operators shall require proper certification when moving/hauling the AUR and any hazardous materials.

C.2.4 For Protection of Health and Safety at Wake Island

- NTMs and NOTAMs would be transmitted to appropriate authorities to clear caution areas of this vessel and air traffic and to inform the public of impending missions. The warning messages would contain information describing the clearance time frame, area affected, and safe alternate routes.

C.3 Standard Operating Procedures at Meck Islet and USAKA

Proposed Activities would be implemented consistent with the Ronald Reagan Space and Missile Test Range (RTR) Programmatic Mission Flight Test Activities Document of Environmental Protection (DEP) (USASMDC 2026) which includes the measures detailed in this section.

C.3.1 General Standard Operating Procedures at Meck Islet and USAKA

- Test and support personnel would be briefed on the standard operating procedures and mitigation measures and the requirement to adhere to them during test activities.
- All materials, vessels, or rafts placed in the water for temporary use during a flight test mission would be removed as soon as practicable after use or at the end of the mission.

- All standard operations, test-related vessels would utilize harbors for on-loading and off-loading personnel and materials. Vessels may moor to piers, anchor, or use marine ramps within established islet harbors.
- Anchoring would occur only in designated harbor areas. No beach-landings or shallow-water anchoring outside of harbors would occur as part of Proposed Activities.

C.3.2 For Protection of Biological Resources at Meck Islet and USAKA

- Test and support personnel briefings would include information on the presence and potential locations of UES-consultation marine species in the activity area.
- Test and support personnel would be vigilant for the presence of UES-protected species during proposed activities, particularly during in-water activities such as vessel operations.
- Test and support personnel would not attempt to approach, touch, feed, or otherwise intentionally interact with any UES-listed marine species.
- All equipment and packages/materials shipped from the United States to RTR would be inspected prior to shipment and washed or otherwise cleaned if necessary to prevent the introduction of animals, plants, and seeds.
- Although unlikely, any dead or injured marine mammals or sea turtles sighted by project personnel would be reported immediately to the U.S. Army Space and Missile Defense Command Environmental Division and the United States Army Garrison –Kwajalein Atoll (USAG-KA) Environmental Office.
- If any man-made debris were to enter the marine environment and divers were required to search for payload debris on the adjacent reef flat, they would be briefed prior to operations about coral fragility and provided guidance on how to carefully retrieve the very small pieces of payload debris that they would be looking for while avoiding unnecessary and accidental impacts to UES-protected species and sensitive habitat, including those listed in UES Appendices 3-4A through 3-4D.
- If divers are required, divers would be briefed on the presence of UES-protected corals and other benthic species in the dive area and the requirement to avoid contact with all benthic species. Divers would avoid kicking corals with fins and would secure all dive equipment to avoid damage to coral or other benthic species.

C.3.3 For Protection of Cultural Resources at Meck Islet and USAKA

- If cultural resource materials, prehistoric or historic, are encountered during Proposed Activities, they will be reported to the USAG-KA CRM (Directorate of Public Works). Until the CRM or their designee has released the area for continued work, the location and materials will be protected and no work in the area will continue. All newly found materials are assumed to be RMI National Register of Historic Places eligible until determined otherwise (USAKA Environmental Standards, UES § 3-7.5.7). The USAG-KA CRM will follow the process described in the *Document of Environmental Protection for the Protection of Cultural Resources* (USAG-KA 2022) for incidental cultural resource material discoveries.
- As established in the *Historic Preservation Plan for United States Army Kwajalein Atoll* (USAKA Environmental Office 2006), the *Document of Environmental Protection for Protection of Cultural Resources* (USAG-KA 2022) for USAKA, the Army or contractor

personnel will implement standard operating procedures in the case of an unanticipated discovery of cultural materials:

- If discovery occurs during excavation activities, the equipment operators shall immediately suspend operations surrounding the discovery.
- Personnel, or the contractor making the discovery, shall secure the site and take necessary steps, including notification and use of USAG-KA Provost Marshal resources if necessary, to provide protection to the site or artifacts.
- The subsurface resources shall be left undisturbed and the USAG-KA CRM and the USAG-KA Historic Preservation Professional shall be immediately notified of the discovery and location of the site. If these individuals are not available, notification shall be made to the Chief of Directorate of Public Works.
- The USAG-KA CRM, with assistance from the USAG-KA Historic Preservation Professional, shall make an initial determination concerning the significance of the site and any artifacts it may include. Archaeological analysis shall be conducted in accordance with accepted professional standards.
- If the affected site is insignificant, the undertaking shall proceed. Insignificance is defined in the Historic Preservation Plan, Section 3.6.1.4 (for Prehistoric, Historic Sites, and Traditional Sites).
- If the site is determined to be potentially significant, activities potentially affecting the site shall be suspended or redirected, as appropriate, until mitigation measures are developed to minimize effects on the resource. Within 24 hours of determining if the site is significant, the USAG-KA CRM shall contact the Republic of the Marshall Islands Cultural and Historic Preservation Office (RMICHPO), who will indicate whether an on-site visit is desired, and if so, the RMICHPO may visit the site within 10 calendar days of notification. The USAG-KA CRM, in consultation with the USAG-KA Historic Preservation Professional, and the RMICHPO representative, shall jointly determine appropriate mitigation measures for the site and disposition of the significant cultural resource(s).
- If the RMICHPO does not visit the site, the USAG-KA CRM shall make a determination on the disposition in consultation with the USAG-KA Historic Preservation Professional and the RMICHPO. The USAG-KA CRM shall inform the RMICHPO of all actions taken.

- If human remains are encountered the following procedures must be taken in addition to the those mentioned above.
  - USAG-KA Provost Marshal, the USAG-KA Historic Preservation Professional, and the USAG-KA CRM shall be contacted. Pending arrival of these personnel, all necessary steps will be taken to secure the area containing the remains, including use of USAG-KA Provost Marshal resources, if necessary, to provide protection to the site.
  - The USAG-KA Hospital personnel or an appropriately qualified Historic Preservation Professional shall determine if the remains are human or animal.
  - If the remains are human, the USAG-KA Provost Marshal personnel shall determine if the remains involve a relatively recent death, in which case the USAG-KA Provost Marshal shall take charge of the site.
  - If it is determined that the remains are part of an archaeological site or are a WWII battle casualty, the following procedures apply:

        - The USAG-KA CRM, in consultation with the USAG-KA Historic Preservation Professional, shall make an initial determination of the historical significance of the remains, applying accepted professional practices, including determining whether the remains involve an intact burial or are fragmentary and from a disturbed context.
        - Within 24 hours following initial determination that a relatively intact burial or significant human remains have been discovered, the RMICHPO shall be notified and may visit the site within 10 calendar days of notification. In the event that the delay would have extreme financial or mission-related implications, the Garrison Commander may proceed with a data recovery program, applying standard archaeological procedures. The Garrison Commander will make the decision only after exhausting reasonable measure to expedite the visit. If the RMICHPO does not visit the site, and has not indicated preferred disposition of the remains, the USAG-KA CRM, in consultation with the USAG-KA Historic Preservation Professional shall determine disposition of the remains and inform the RMICHPO of the disposition.
    - If the remains are determined to be significant, the USAG-KA CRM, with assistance from the USAG-KA Historic Preservation Professional, and the RMICHPO, shall jointly determine appropriate disposition of the remains. following procedures outlined in Section 1.7(g) of the DEP.
- In addition to these standard operating procedures, Project personnel should be briefed during the routine construction briefings and before activities commence at each location regarding the significance of cultural resources and the penalties associated with their disturbance or collection.

C.3.4 For Protection of Hazardous Waste at Meck Islet and USAKA

- Activity specific Hazardous Materials Procedures shall be submitted to USAG-KA for approval within 15 days of receipt of the material or before use, whichever comes first.
- For USAKA-launch flight tests, test personnel would search for, recover, and properly dispose of post-launch debris to the greatest extent practicable. This may include the recovery of visible debris in shallow (less than 100 feet deep) ocean waters by divers. All visible project-related man-made debris would be recovered during post-flight operations. In all cases, recovery and cleanup would be conducted in a manner to avoid or minimize further impacts on biological resources.
- Vessel operations would not involve any intentional ocean discharges of fuel, toxic wastes, or plastics and other solid wastes that could potentially harm marine life.
- Vessel and heavy equipment operators would inspect and clean equipment for fuel or fluid leaks prior to use or transport and prior to use daily and would not intentionally discharge fuels or waste materials into terrestrial or marine environments.
- Spill kits would be maintained at activity sites, including on vessels. Any spill would be addressed immediately to prevent discharge into water bodies or groundwater. Spills would be reported as required and in accordance with the Kwajalein Environmental Emergency Plan (KEEP; USAG-KA 2023).
- Any accidental spills from support equipment operations would be contained and cleaned up and all waste materials would be transported to Kwajalein Islet for proper disposal.

- Hazardous substances and wastes would be handled in adherence to the hazardous substances and waste management systems of USAG-KA. Response to releases of oil, fuels, lubricants or other hazardous substances into the USAKA environment would be in accordance with the procedures set out in the KEEP (USAG-KA 2023) and the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands* (UES).

C.3.5 For Protection of Health and Safety at Meck Islet and USAKA

- NTMs and NOTAMs would be transmitted to appropriate authorities to clear caution areas of this vessel and air traffic and to inform the public of impending missions. The warning messages would contain information describing the clearance time frame, area affected, and safe alternate routes.
- Nonessential personnel would be evacuated from the Mid-Atoll Corridor as necessary before and during flight tests and the area would be monitored for unauthorized access.

C.4 Standard Operating Procedures in the BOA

C.4.1 For Protection of Biological Resources in the BOA

- During travel to and from impact zones, and during raft deployment, ship personnel would monitor for marine mammals and sea turtles to avoid potential vessel strikes, consistent with Navy standard operating procedures for vessel operation. Vessel operators would adjust speed or raft deployment based on the presence of special-status animals and/or lighting and turbidity conditions.
- Vessel operations would only occur when weather and sea conditions are acceptable for safe travel. Vessel operations would not involve any intentional ocean discharges of fuel, toxic wastes, or plastics and other solid wastes that could potentially harm marine life.
- Proposed activities would not involve any vessel anchoring.
- Measures would be implemented to ensure all vessel hulls do not pose a risk of introducing new invasive species and therefore would not increase abundance of invasive species present at project locations.
- Payload impact sites would be inspected after each flight test and any visible flight test debris on the ocean surface would be recovered and removed to the extent practicable.
- The Action Proponents will submit an annual report to the National Marine Fisheries Service (NMFS) as required and specified in the NMFS Endangered Species Act (ESA) Section 7 letters of concurrence for Joint Flight Campaign (JFC) flight test activities (NMFS 2021). The annual report would include information regarding JFC program activities and observations of ESA-listed species, submitted within 30 days of the end of each program year.

C.4.2 For Protection of Hazardous Waste in the BOA

- Any accidental spills from support equipment operations would be contained and cleaned up. Spill response kits would be available on all support equipment.
- Although no residual debris is expected following impact, after each flight test a recovery team would be sent to inspect the impact location as soon as range safety clears the area. Visible debris on the surface of the ocean would be recovered and removed after each flight test (up to six joint test operations per year until 2032).

- For ocean-based target sites, test personnel would search for any visible floating test debris after payload impact. Any visible payload or other test debris found floating would be recovered, as much as practicable.
- All temporary test equipment, including sensor and target rafts, would be removed from the marine environment at the completion of each mission.

C.4.3 For Protection of Health and Safety in the BOA

- NTMs and NOTAMs would be transmitted to appropriate authorities to clear caution areas of this vessel and air traffic and to inform the public of impending missions. The warning messages would contain information describing the clearance time frame, area affected, and safe alternate routes.

D

Voluminous Resource Materials

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APPENDIX D. VOLUMINOUS RESOURCE MATERIALS

D.1 Resource Topics Considered for Detailed Analysis

Table D-1. Resource Topics Considered and Justification for Resource Topics Not Carried Forward for Detailed Analysis

Resource Topic	Location within Proposed Action Area			
	San Nicolas Island, Point Mugu Sea Range, California	**Wake Island**	**Meck Islet, USAKA, RMI**	**Pacific and Atlantic Broad Ocean Areas**
Airspace Management	Implementation of the Proposed Action would not require the establishment of new special use airspace routes, would not include proposed airspace modifications, and would not change the relationship of existing special use airspace with federal airways, uncharted visual flight routes, and airport-related air traffic operations. Proposed activities would be conducted following all relevant Federal Aviation Administration regulations/requirements for flight testing. The Proposed Action would have negligible impacts on airspace management and this resource was not carried forward for analysis.			
Air Quality & Climate Change	Carried Forward	Carried Forward	Carried Forward (as required by the UES)	Carried Forward
Biological Resources	Carried Forward	Carried Forward	Carried Forward	Proposed modifications to the Pacific BOAs do not change the analyses or conclusions drawn for the impacts of JFC activities in the BOA in previous JFC EA/OEAs (the No Action Alternative) in any substantive or substantial way. All previously established JFC standard operating procedures applicable to the BOA would be implemented in new BOA areas as listed in **Appendix C**. The Navy and Army evaluated all potential effects of the Proposed Action on ESA and Marine Mammal Protection Act protected species in detail as summarized in **Table 8**. As previously concluded for JFC flight tests, the Proposed Action would have less than significant effects on biological resources in the BOA and this resource was not carried forward for analysis.
Coastal Zone Management	The Proposed Action is consistent with ongoing activities at SNI and PMSR as evaluated in the PMSR EIS/OEIS (Navy 2022) and HCTT EIS/OEIS (Navy 2025a). The Proposed Action would have negligible impacts on coastal zone	The Proposed Action is consistent with ongoing activities at Wake Island and Wake Atoll. Wake Atoll does not fall into any federal or territorial coastal zone management program; therefore the Proposed Action would not impact coastal zone	USAKA does not contain any coastal zone resources as defined under the Coastal Zone Management Act. UES standards and procedures related to the coastal resources and reef protection primarily involve standards for water quality (UES § 3-2) including the	The BOA does not contain any coastal zone resources as defined under the Coastal Zone Management Act of 1972 and proposed activities in the BOA would have no impacts on coastal zone management.

Resource Topic	Location within Proposed Action Area			
	San Nicolas Island, Point Mugu Sea Range, California	**Wake Island**	**Meck Islet, USAKA, RMI**	**Pacific and Atlantic Broad Ocean Areas**
	management and this resource was not carried forward. Consultation under the Coastal Zone Management Act may be required if SNI is selected as a site for implementation of the Proposed Action.	management and this resource was not carried forward.	classification of coastal water uses (UES § 3-2.4.1). The Proposed Action is consistent with ongoing activities at USAKA and would not result in coastal water use reclassification. Therefore, this topic was not carried forward for analysis.	
Cultural Resources	Carried Forward	Carried Forward	Carried Forward	There are no identified cultural resources with the potential to be affected along the possible flight paths over the ocean or in the Atlantic and Pacific BOAs. Therefore, there would be no adverse effects to cultural resources within the Atlantic and Pacific BOAs from JFC flight tests.
Geology & Soils	Carried Forward	Carried Forward	Carried Forward	Similar to analysis in previous JFC EA/OEAs, there would be no adverse effects from the Proposed Action to geological and soil resources in the BOAs (Navy and Army 2022 and 2024).
Hazardous Materials & Waste Management	Carried Forward	Carried Forward	Carried Forward	Carried Forward
Health & Safety	Carried Forward	Carried Forward	Carried Forward	Carried Forward
Infrastructure & Utilities	The Proposed Action is consistent with current use at SNI. Pad modifications, minor utilities upgrades, and possible trenching would occur at a developed launch site and would have negligible impacts on utilities and infrastructure systems. Therefore, this topic was not carried forward for analysis.	The Proposed Action is consistent with current use and within the limits of current operations at Wake Island and USAKA. Any utility modifications at launch sites at Wake Island and Meck Islet would be temporary and minor and would not impact ongoing or future infrastructure and utility operations. No impacts to infrastructure and utilities would be expected as a result of the Proposed Activities.		There would be no changes or impacts to infrastructure along the flight paths over or within the Atlantic and Pacific BOAs.
Land Use	The Proposed Activities (including new launch pad construction or modification) are consistent with the current use and within the limits of current operations at PMSR, Wake Island, and			There would be no changes or impacts to land use along the flight paths over or within the Atlantic and Pacific BOAs.

Resource Topic	Location within Proposed Action Area			
	San Nicolas Island, Point Mugu Sea Range, California	**Wake Island**	**Meck Islet, USAKA, RMI**	**Pacific and Atlantic Broad Ocean Areas**
	USAKA. No impacts to land use resources would be expected as a result of the Proposed Activities.			
Noise	All Proposed Action launches would take place on DoD-controlled islands where military training and testing, including launches from land-based launch sites, is a routine occurrence. There would be no noise sensitive human receptors where Proposed Action noise would occur except for military and test-related personnel who would be subject to DoD noise-protective standard operating procedures (i.e., use of ear plugs, personal protective equipment, and safety distances). Therefore, any impacts from noise would be negligible and insignificant on non-wildlife receptors.			There would be no human noise receptors located at the BOA target sites and JFC vehicle flight would occur at high altitude when it would generally be undetectable by human receptors. Flight test personnel on vessels would follow current noise protection standard operating procedures for flight tests. Therefore, any impacts from noise in the BOAs would be negligible and insignificant on non-wildlife receptors.
Socioeconomics & Environmental Justice	The Proposed Action is consistent with the current use and within the limits of current operations at PMSR, Wake Island, Meck Islet, and within the BOA. As such, no impacts to socioeconomics or environmental justice would be expected as a result of the proposed activities. The Notice of Proposed Activity for RTR Programmatic Mission Flight Test Activities (USASMDC 2025a) includes a description of the socioeconomic and the environmental justice setting and effects analysis associated with all flight test activities at USAKA.			
Transportation	The Proposed Activities are consistent with the mission and within the limits of current operations at PMSR, Wake Island, and USAKA. No impacts to transportation would be expected as a result of the Proposed Activities.			Vessel traffic and flight paths would be unaffected by the Proposed Action. Public NOTAMs and NTMs would be issued along the flight path to ensure the safety of both aircraft and vessels. Therefore, no impacts from the Proposed Activities are expected to transportation services along the flight path in the BOAs.
Water Resources	Carried Forward	Carried Forward	Carried Forward	Similar to analysis in previous JFC EA/OEAs, there would be no adverse effects from the Proposed Action to water resources in the BOAs (Navy and Army 2022 and 2024).

Acronyms and Abbreviations: BOA = Broad Ocean Area, DoD = Department of Defense, Navy = Department of the Navy, EA/OEA = Environmental Assessment / Overseas Environmental Assessment, EIS/OEIS = Environmental Impact Statement / Overseas Environmental Impact Statement, ESA = Endangered Species Act, HCTT = Hawaii California Training and Testing, JFC = Joint Flight Campaign, NOTAM = Notice to Airmen, NTM = Notice to Mariners, PMSR = Point Mugu Sea Range, RMI = Republic of the Marshall Islands, RTR = Ronald Reagan Space and Missile Test Range, SNI = San Nicolas Island, UES = USAKA Environmental Standards, USAKA = United States Army Kwajalein Atoll

D.2 Voluminous Biological Resource Materials

Table D-2. Special Status Terrestrial Vegetation and Wildlife Species in the SNI Region of Influence

Common Name	Scientific Name	Federal Listing Status	State Listing Status	Occurrence in SNI ROI
Terrestrial Nesting Birds				
Mallard	*Anas platyrhynchos*	MBTA	-	Uncommon
Anna's hummingbird	*Calypte anna*	MBTA	-	Common
San Clemente Island house finch	*Carpodacus mexicanus clementis*	MBTA	-	Abundant
Western snowy plover	*Charadrius nivosus*	ESA-T, MBTA	-	Common on sandy beaches
Common raven	*Corvus corax*	MBTA	-	Uncommon
Peregrine falcon	*Falco peregrinus*	MBTA	-	Uncommon
American kestrel	*Falco sparverius*	MBTA	-	Common
American coot	*Fulica americana*	MBTA	-	Uncommon
Island horned lark	*Eremophila alpestris insularis*	MBTA	-	Abundant
Black oystercatcher	*Haematopus bachmani*	MBTA, BCC	-	Uncommon
Bald eagle	*Haliaeetus leucocephalus*	-	E	Uncommon
Barn swallow	*Hirundo rustica*	MBTA	-	Rare
Western gull	*Larus occidentalis*	MBTA, BCC	-	Common
Northern mockingbird	*Mimus polyglottos*	MBTA	-	Common
Double-crested cormorant	*Phalacrocorax auritus*	MBTA	-	Rare
Pelagic cormorant	*Phalacrocorax pelagicus*	MBTA	-	Common
Brandt's cormorant	*Phalacrocorax penicillatus*	MBTA, BCC	-	Abundant
Orange-crowned warbler	*Oreothlypis celata sordida*	MBTA	-	Common
Rock wren	*Salpinctes obsoletus*	MBTA	-	Common
Western meadowlark	*Sturnella neglecta*	MBTA	-	Abundant
Barn owl	*Tyto alba*	MBTA	-	Uncommon
Mammals in Terrestrial Habitats				
San Nicolas Island fox	*Urocyon littoralis dickeyi*	-	T	Common
Guadalupe fur seal	*Arctocephalus townsendi*	ESA-T, MMPA	T	Rare and unlikely
Northern elephant seal	*Mirounga angustirostris*	MMPA	-	Seasonally common in coastal habitats
Harbor seal	*Phoca vitulina*	MMPA	-	Common in coastal habitats
California sea lion	*Zalophus californianus*	MMPA	-	Common in coastal habitats

Sources: Navy 2025a, Navy 2022, DARPA 2020, CNDDB 2025, USFWS 2021

Notes:

1 Over 195 species of seabirds use the marine waters of Point Mugu Sea Range (see Navy 2022). Almost all of these are listed under the MBTA. Only marine bird species listed under the ESA or by the state of California are included in this table.

Acronyms and Abbreviations: BCC = Birds of Conservation Concern, E = Endangered, ESA = Endangered Species Act, MBTA = Migratory Bird Treaty Act, MMPA = Marine Mammal Protection Act, ROI = Region of Influence, SNI = San Nicolas Island, T = Threatened, "-" = not listed

Table D-3. Special Status Terrestrial Vegetation and Wildlife Species in the Wake Island Region of Influence

Common Name	Scientific Name	Federal Listing Status	Occurrence in Wake Island ROI
Migratory Birds			
Common sandpiper	*Actitis hypoleucos*	MBTA	Migrant
Northern pintail	*Anas acuta*	MBTA	Migrant
Green-winged teal	*Anas crecca*	MBTA	Migrant
Black noddy	*Anous minutus*	MBTA	Nests at Wake Atoll
Brown noddy	*Anous stolidus*	MBTA, BCC	Nests at Wake Atoll
Sooty shearwater	*Ardenna grisea*	MBTA	Migrant
Wedge-tailed shearwater	*Ardenna pacifica*	MBTA	Nests on Peacock Point
Ruddy turnstone	*Arenaria interpres*	MBTA	Migrant
Short-eared owl	*Asio flammeus*	MBTA	Occasional migrant
Tufted duck	*Aythya fuligula*	MBTA	Migrant
Aleutian cackling goose	*Branta hutchinsii leucopareia*	MBTA	Migrant
Cattle egret	*Bubulcus ibis*	MBTA	Migrant
Common goldeneye	*Bucephala clangula*	MBTA	Migrant
Sharp-tailed sandpiper	*Calidris acuminata*	MBTA	Migrant
Sanderling	*Calidris alba*	MBTA	Migrant
Dunlin	*Calidris alpine*	MBTA	Migrant
Pectoral sandpiper	*Calidris melanotos*	MBTA	Migrant
Ruff	*Calidris pugnax*	MBTA	Migrant
Lesser sand plover	*Charadrius mongolus*	MBTA	Migrant
Pacific reef heron	*Egretta sacra*	MBTA	Migrant
Lesser frigatebird	*Fregata ariel*	MBTA	Migrant
Great frigatebird	*Fregata minor*	MBTA, BCC	Nests at Wake Atoll
Common snipe	*Gallinago gallinago*	MBTA	Migrant
White tern	*Gygis alba*	MBTA	Nests on Peacock Point
Sea-eagle	*Haliaeetus* spp.	MBTA	Migrant
Leach's storm-petrel	*Hydrobates leucorhous*	MBTA	Migrant
Glaucous-winged gull	*Larus glaucescens*	MBTA	Migrant
Laughing gull	*Leucophaeus atricilla*	MBTA	Migrant
Long-billed dowitcher	*Limnodromus scolopaceus*	MBTA	Migrant
Eurasian wigeon	*Mareca penelope*	MBTA	Migrant
Black kite	*Milvus migrans*	MBTA	Migrant
Whimbrel	*Numenius phaeopus*	MBTA	Migrant
Bristle-thighed curlew	*Numenius tahitiensis*	MBTA, BCC	Nests at Wake Atoll
Sooty tern	*Onychoprion fuscatus*	MBTA	Nests at Wake Atoll
Gray-backed tern	*Onychoprion lunata*	MBTA, BCC	Nests at Wake Atoll
Red-tailed tropicbird	*Phaethon rubricauda*	MBTA	Nests at Wake Atoll
White-tailed tropicbird	*Phaethon lepturus*	MBTA	Nests on Peacock Point
Laysan albatross	*Phoebastria immutabilis*	MBTA, BCC	Nests at Wake Atoll
Black-footed albatross	*Phoebastria nigripes*	MBTA, BCC	Nests on Peacock Point
Pacific golden plover	*Pluvialis fulva*	MBTA	Migrant
Black-winged petrel	*Pterodroma nigripennis*	MBTA	Migrant
Newell's shearwater	*Puffinus auricularis newelli*	ESA-E, MBTA	Migrant
Christmas shearwater	*Puffinus nativitatis*	MBTA, BCC	Nests at Wake Atoll
Northern shoveler	*Spatula clypeata*	MBTA	Migrant
Garganey	*Spatula querquedula*	MBTA	Migrant
Masked booby	*Sula dactylatra*	MBTA	Nests at Wake Atoll
Brown booby	*Sula leucogaster*	MBTA	Nests at Wake Atoll
Red-footed booby	*Sula sula*	MBTA	Nests at Wake Atoll
Gray-tailed tattler	*Tringa brevipes*	MBTA	Migrant

Common Name	Scientific Name	Federal Listing Status	Occurrence in Wake Island ROI
Wandering tattler	*Tringa incana*	MBTA, BCC	Migrant
Greater yellowlegs	*Tringa melanoleuca*	MBTA	Migrant
Long-tailed koel	*Urodynamis taitensis*	MBTA	Migrant
Sea Turtles in Terrestrial Habitats			
Green turtle - Central West Pacific DPS	*Chelonia mydas*	ESA-E	Occasionally hauls out on Wake Island beaches

Sources: PRSC 2023a, MDA 2015, USFWS 2021
Acronyms and Abbreviations: BCC = Birds of Conservation Concern, DPS = Distinct Population Segment, E = Endangered, ESA = Endangered Species Act, MBTA = Migratory Bird Treaty Act, ROI = Region of Influence, T = Threatened

Table D-4. Special Status Terrestrial Vegetation and Wildlife Species in the USAKA Region of Influence

Common Name	Scientific Name	Listing Status [1]	Occurrence in Wake Island ROI
Migratory Birds			
Black noddy	*Anous minutus*	MBTA, UES	Abundant Resident
Brown noddy	*Anous stolidus*	MBTA, UES	Common Resident
Wedge-tailed shearwater	*Ardenna pacifica*	MBTA, UES	Abundant Migrant
Ruddy turnstone	*Arenaria interpres*	MBTA, UES	Common Resident
Sharp-tailed sandpiper	*Calidris acuminata*	MBTA, UES	Uncommon Vagrant
Sanderling	*Calidris alba*	MBTA, UES	Abundant Migrant
Brown noddy	*Anous stolidus*	MBTA, UES	Uncommon Migrant
Ruddy turnstone	*Arenaria interpres*	MBTA, UES	Uncommon Migrant
Pectoral sandpiper	*Calidris melanotos*	MBTA, UES	Accidental Migrant
Pacific reef heron	*Egretta sacra*	MBTA, UES	Common Resident
Great frigatebird	*Fregata minor*	MBTA, UES	Uncommon Resident
White tern	*Gygis alba*	MBTA, UES	Common Resident
Bar-tailed godwit	*Limosa lapponica*	MBTA, UES	Uncommon Migrant
Whimbrel	*Numenius phaeopus*	MBTA, UES	Common Migrant
Pacific golden plover	*Pluvialis fulva*	MBTA, UES	Abundant Migrant
Black-bellied plover	*Pluvialis squatarola*	MBTA, UES	Uncommon Migrant
Black-naped tern	*Sterna sumatrana*	MBTA, UES	Common Nesting Resident
Brown booby	*Sula leucogaster*	MBTA, UES	Uncommon Resident
Great crested tern	*Thalasseus bergii*	MBTA, UES	Common Resident
Gray-tailed tattler	*Tringa brevipes*	MBTA, UES	Uncommon Migrant
Wandering tattler	*Tringa incanus*	MBTA, UES	Common Migrant
Sea Turtles in Terrestrial Habitats			
Green turtle–Central West Pacific DPS	*Chelonia mydas*	ESA-E, UES	Occasionally hauls out on USAKA beaches

Sources: USASMDC 2025a, USASMDC 2025b, USASMDC 2024
Notes: [1] All birds that occur on Meck Islet are protected as coordination species and listed in UES Appendix 3-4C. Sea turtles are listed as consultation species in UES Appendix 3-4A.
Acronyms and Abbreviations: DPS = Distinct Population Segment, E = Endangered, ESA = Endangered Species Act, MBTA = Migratory Bird Treaty Act, UES = United States Army Kwajalein Atoll Environmental Standards, USAKA = United States Army Kwajalein Atoll

Table D-5. Special Status Marine Vegetation and Wildlife Species in the Region of Influence

Common Name	Scientific Name	Listing Status	Occurrence in SNI ROI	Occurrence in Wake Island ROI	Occurrence at USAKA [1]	Occurrence in the Pacific BOA
Corals						
Starry cup coral	*Acanthastrea brevis*	UES	-	-	Nearshore reefs	-
Bottlebrush Acropora	*Acropora aspera*	UES	-	-	Nearshore reefs	-
	Acropora globiceps	ESA-T, UES	-	Nearshore reefs	-	-
Strawberry shortcake Acropora	*Acropora microclados*	UES	-	-	Nearshore reefs	-
	Acropora paniculata	UES	-	-	Nearshore reefs	-
	Acropora polystoma	UES	-	-	Meck harbor	-
	Acropora retusa	ESA-T, UES	-	Nearshore reefs		-
Agassiz's coral	*Cyphastrea agassizi*	UES	-	-	Nearshore reefs	-
Blue coral	*Heliopora coerulea*	UES	-	-	Nearshore reefs	-
Swelling coral	*Leptoseris incrustans*	UES	-	-	Nearshore reefs	-
	Montipora caliculata	UES	-	-	Nearshore reefs	-
	Pavona cactus	UES	-	-	Meck harbor	-
	Pavona venosa	UES	-	-	Nearshore reefs	-
Other Marine Invertebrates						
Black abalone	*Haliotis cracherodii*	ESA-E	Rocky substrate in intertidal zone	-	-	-
White abalone	*Haliotis sorenseni*	ESA-E	Rocky substrate in subtidal zone (16 to 197 feet deep)	-	-	-
Horse's hoof clam	*Hippopus hippopus*	ESA-PT, UES	-	-	Nearshore reefs	-
Black-lip pearl oyster	*Pinctada margaritifera*	UES	-	-	Nearshore reefs	-
True giant clam	*Tridacna gigas*	ESA-PE, UES	-	Nearshore reefs	Nearshore reefs	-
Small giant clam	*Tridacna maxima*	ESA-PT, UES	-	Nearshore reefs	Nearshore reefs	-
Fluted giant clam	*Tridacna squamosa*	ESA-PT, UES	-	Nearshore reefs	Nearshore reefs	-
Top shell snail	*Trochus (Tectus) niloticus*	UES	-	-	Nearshore reefs	-
Fishes						
Green sturgeon – Southern DPS	*Acipenser medirostris*	ESA-T	Offshore waters	-	-	-
Bigeye thresher shark	*Alopias superciliosus*	UES	-	-	Offshore waters	-
Bumphead parrotfish	*Bolbometopon muricatum*	UES	-	Nearshore reefs	Nearshore reefs	-
Oceanic whitetip shark	*Carcharhinus longimanus*	ESA-T, UES	Offshore waters	Offshore waters	Offshore waters	Tropical and Subtropical Pacific
Humphead wrasse	*Cheilinus undulatus*	UES	-	Nearshore reefs	Nearshore reefs	-
Tope shark	*Galeorhinus galeus*	ESA-C	Nearshore and offshore waters	-	-	-

Common Name	Scientific Name	Listing Status	Occurrence in SNI ROI	Occurrence in Wake Island ROI	Occurrence at USAKA [1]	Occurrence in the Pacific BOA
Fishes (continued)						
Shortfin mako shark	*Isurus oxyrinchus*	UES	-	-	Offshore waters	-
Reef manta ray	*Mobula (Manta) alfredi*	UES	-	-	Nearshore and offshore waters	-
Oceanic giant manta ray	*Mobula (Manta) birostris*	ESA-T, UES	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical, and Equatorial Pacific
Chum salmon – Hood Canal Summer run ESU	*Oncorhynchus keta*	ESA-T	Offshore waters	-	-	GOA and California Current
Coho salmon[2]	*Oncorhynchus kisutch*	ESA-E, ESA-T[2]	Offshore waters	-	-	GOA and California Current
Steelhead[2]	*Oncorhynchus mykiss*	ESA-E, ESA-T[2]	Offshore waters	-	-	GOA and California Current
Sockeye salmon[2]	*Oncorhynchus nerka*	ESA-E, ESA-T[2]	Offshore waters	-	-	GOA and California Current
Chinook salmon[2]	*Oncorhynchus tshawytscha*	ESA-E, ESA-T[2]	Offshore waters	-	-	GOA and California Current
Scalloped hammerhead shark	*Sphyrna lewini*					
Eastern Pacific DPS		ESA-E	Offshore waters	-	-	NC and E Tropical Pacific
Indo-West Pacific DPS		ESA-T, UES	-	Offshore waters	Offshore waters	Western Insular, NC, and Equatorial Pacific
Eulachon – Southern DPS	*Thaleichthys pacificus*	ESA-T	Offshore waters	-	-	-
Sea Turtles						
Loggerhead turtle – North Pacific Ocean DPS	*Caretta caretta*	ESA-E, UES	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical, Equatorial, and Subarctic Pacific
Green turtle	*Chelonia mydas*					
Central North Pacific DPS		ESA-T	-	-	-	NC Pacific
Central South Pacific DPS		ESA-E	-	-	-	Equatorial Pacific
Central West Pacific DPS		ESA-E, UES	-	Nearshore and offshore waters	Nearshore and offshore waters	Western Tropical and Equatorial Pacific
East Pacific DPS		ESA-T	Nearshore and offshore waters	-	-	Eastern Pacific
Leatherback turtle	*Dermochelys coriacea*	ESA-E, UES	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical, Equatorial, and Subarctic Pacific
Hawksbill turtle	*Eretmochelys imbricata*	ESA-E, UES	Offshore waters	Nearshore and offshore waters	Nearshore and offshore waters	NC, E Tropical and Equatorial Pacific
Olive ridley turtle	*Lepidochelys olivacea*					
All other populations (not Mexico's Pacific Coast breeding populations)		ESA-T, UES	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical and Equatorial Pacific
Mexico's Pacific Coast Breeding Population		ESA-T	Offshore waters	-	-	E Tropical Pacific

Common Name	Scientific Name	Listing Status	Occurrence in SNI ROI	Occurrence in Wake Island ROI	Occurrence at USAKA [1]	Occurrence in the Pacific BOA
Marine Birds[3]						
Marbled murrelet	*Brachyramphus marmoratus*	ESA-T, MBTA	Offshore waters	-	-	-
Band-rumped storm-petrel – Hawaii DPS	*Oceanodroma castro*	ESA-E, MBTA	-	-	-	NC, E Tropical, and Equatorial Pacific
Short-tailed albatross	*Phoebastria albatrus*	ESA-E, MBTA	-	-	-	NC and Subarctic Pacific
Hawaiian petrel	*Pterodroma sandwichensis*	ESA-E, MBTA	-	-	-	NC, Equatorial, and Subarctic Pacific
Newell's shearwater	*Puffinus auricularis newelli*	ESA-T, MBTA	-	Offshore waters	-	NC and Equatorial Pacific
California least tern	*Sternula antillarum browni*	ESA-E, MBTA	Offshore waters, Unlikely at SNI	-	-	-
Marine Mammals						
Guadalupe fur seal	*Arctocephalus townsendi*	ESA-T, MMPA	Nearshore and offshore waters	-	-	California Current, NC and E Tropical Pacific
Minke whale	*Balaenoptera acutorostrata*	MMPA	Offshore waters	Offshore waters	-	California Current, NC and Subarctic Pacific
Sei whale	*Balaenoptera borealis*	ESA-E, MMPA	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical, Equatorial, and Subarctic Pacific
Bryde's whale	*Balaenoptera edeni*	MMPA	Offshore waters	Offshore waters	Offshore waters	NC, E. Tropical, and Equatorial Pacific
Blue whale	*Balaenoptera musculus*	ESA-E, MMPA	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical, Equatorial, and Subarctic Pacific
Fin whale	*Balaenoptera physalus*	ESA-E, MMPA	Offshore waters	Offshore waters	Offshore waters	NC, E Tropical, Equatorial, and Subarctic Pacific
Baird's beaked whale	*Berardius bairdii*	MMPA	Offshore waters	-	-	California Current, NC and Subarctic Pacific
Northern fur seal	*Callorhinus ursinus*	MMPA	Offshore waters	-	-	California Current, NC and Subarctic Pacific
Long-beaked common dolphin	*Delphinus capensis*	MMPA	Offshore waters	-	-	California Current, E Tropical Pacific
Short-beaked common dolphin	*Delphinus delphis*	MMPA, UES	Offshore waters	-	Offshore waters	California Current, E Tropical and Equatorial Pacific
Gray whale –Western North Pacific DPS	*Eschrichtius robustus*	ESA-E, MMPA	Offshore waters	-	-	GOA, California Current, Pacific Subarctic
North Pacific right whale	*Eubalaena japonica*	ESA-E, MMPA	Offshore waters	-	-	NC Pacific and Pacific Subarctic
Steller sea lion – Western DPS	*Eumetopias jubatus*	ESA-E	-	-	-	GOA, Pacific Subarctic

Common Name	Scientific Name	Listing Status	Occurrence in SNI ROI	Occurrence in Wake Island ROI	Occurrence at USAKA [1]	Occurrence in the Pacific BOA
Marine Mammals (continued)						
Southern sea otter	*Enhydra lutris nereis*	ESA-T, MMPA	Nearshore	-	-	-
Pygmy killer whale	*Feresa attenuata*	MMPA, UES	Offshore waters	-	Offshore waters	California Current, E Tropical and Equatorial Pacific
Short-finned pilot whale	*Globocephala macrorhynchus*	MMPA, UES	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
Risso's dolphin	*Grampus griseus*	MMPA, UES	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
Pygmy sperm whale	*Kogia breviceps*	MMPA, UES	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
Dwarf sperm whale	*Kogia sima*	MMPA	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific
Northern right whale dolphin	*Lissodelphis borealis*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific
Humpback whale	*Megaptera novaeangliae*					
Central America DPS		ESA-E, MMPA	Offshore waters	-	-	NC and E Tropical Pacific
Mexico DPS		ESA-T, MMPA	Offshore waters	-	-	NC, E Tropical and Subarctic Pacific
Western North Pacific DPS		ESA-E, MMPA, UES	-	Offshore waters	Offshore waters	NC Pacific and Pacific Subarctic
Hubbs' beaked whale	*Mesoplodon carlhubbsi*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific
Blainville's beaked whale	*Mesoplodon densirostris*	MMPA, UES	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
Gingko-toothed beaked whale	*Mesoplodon ginkgodens*	MMPA	Offshore waters	-	-	California Current, E Tropical and Equatorial Pacific
Perrin's beaked whale	*Mesoplodon perrini*	MMPA	Offshore waters	-	-	California Current, NC Pacific
Lesser beaked whale	*Mesoplodon peruvianus*	MMPA	Offshore waters	-	-	California Current
Stejneger's beaked whale	*Mesoplodon stejnegeri*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific
Northern elephant seal	*Mirounga angustirostris*	MMPA	Offshore waters	-	-	California Current, NC and E Tropical Pacific
Hawaiian monk seal	*Neomonachus schauinslandi*	ESA-E, MMPA	-	Very rare nearshore	-	Insular Pacific- Hawai'i
Killer whale	*Orcinus orca*	MMPA, UES	Offshore waters	-	Offshore waters	California Current, NC and Subarctic Pacific
Melon-headed whale	*Peponocephala electra*	MMPA, UES	-	-	Offshore waters	E Tropical and Equatorial Pacific
Harbor seal	*Phoca vitulina*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific

Common Name	Scientific Name	Listing Status	Occurrence in SNI ROI	Occurrence in Wake Island ROI	Occurrence at USAKA [1]	Occurrence in the Pacific BOA
Marine Mammals (continued)						
Harbor porpoise	*Phocoena phocoena*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific
Dall's porpoise	*Phocoenoides dalli*	MMPA	Offshore waters	-	-	California Current, Subarctic Pacific
Sperm whale	*Physeter macrocephalus*	ESA-E, MMPA	Offshore waters	Offshore waters	Offshore waters	NC Pacific and Pacific Subarctic
False killer whale	*Pseudorca crassidens*					
Main Hawaiian Islands DPS		ESA-E, MMPA	-	-	-	Insular Pacific – Hawai'i
Non-Main Hawaiian Islands		MMPA, UES	-	-	Offshore waters	E Tropical and Equatorial Pacific
Pantropical spotted dolphin	*Stenella attenuata*	MMPA, UES	-	-	Offshore waters	E Tropical and Equatorial Pacific
Striped dolphin	*Stenella coeruleoalba*	MMPA, UES	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
Spinner dolphin	*Stenella longirostris*	MMPA, UES	-	Offshore waters	Offshore waters	NC, E Tropical, and Equatorial Pacific
Common bottlenose dolphin	*Tursiops truncatus*	MMPA, UES	Nearshore and offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, and Equatorial Pacific
California sea lion	*Zalophus californianus*	MMPA	Nearshore and offshore waters	-	-	California Current
Cuvier's beaked whale	*Ziphius cavirostris*	MMPA	Offshore waters	Offshore waters	Offshore waters	California Current; NC, E Tropical, Equatorial, and Subarctic Pacific

Sources: Navy 2025a, Navy 2022, DARPA 2020, PRSC 2023a, USASMDC 2025b

Notes: [1] For occurrence at USAKA, this table includes only species listed as consultation species in UES Appendix 3-4A found in nearshore waters near Meck Islet launch sites, in Meck harbor, or in deep offshore waters. Species with special status only under the UES are only shown to occur with special status at USAKA even though the species might occur in other locations without protected status.

[2] Four ESA-listed ESUs of coho salmon, seven ESA-listed DPSs of steelhead trout, two ESA-listed ESUs of sockeye salmon, and nine ESA-listed ESUs of chinook salmon may occur in the ROI.

[3] Only ESA listed birds that may occur in the ROI are listed in this table, almost all birds occurring within the ROI are also listed under the MBTA.

Acronyms and Abbreviations: C = Candidate, DPS = Distinct Population Segment, E (in status) = Endangered, E (in occurrence) = East, ESA = Endangered Species Act, ESU = Evolutionarily Significant Unit, GOA = Gulf of Alaska, MBTA = Migratory Bird Treaty Act, MMPA = Marine Mammal Protection Act, NC = North Central, P = Proposed, SNI = San Nicolas Island, T = Threatened, UES = United States Army at Kwajalein Atoll Environmental Standards, USAKA = United States Army Kwajalein Atoll

Table D-6. Potential Biological Resource Stressors Resulting from Proposed JFC Activities

Stressor	Launch Site	Nearshore Waters	Stage 1 Booster Drop Zones in BOA	Stage 2 Booster Drop and Payload Impact Zones in BOA
Elevated Sound Pressure Levels				
Concrete Pad or Footer Construction or Modification	Equipment operation noise typical of large trucks at a maximum of 82 dB in air (re 20 µPa) at 50 ft during construction	N/A	N/A	N/A
Vehicle Launch	Maximum sound pressures less than 140 dB in air (re 20 µPa) at 1,500 ft from the launch point; duration 4.26 seconds.	N/A	N/A	N/A
Sonic Booms	N/A	N/A	Maximum sound pressure less than 135 dB in water (re 1 µPa) at the surface for vehicle flight; duration 0.27 seconds.	Maximum sound pressure less than 135 dB in water (re 1 µPa) at the surface for vehicle flight; duration 0.27 seconds. Maximum sound pressure less than 175 dB in water (re 1 µPa) near payload impact; duration approximately 0.08 seconds.
Booster Splashdown / Payload Impact	N/A	N/A	Estimated maximum of 218 dB in-water at stage 1 booster splashdown.	Estimated maximum of 201 dB in-water at stage 2 booster splashdown. Estimated maximum of 191 dB in-water at payload impact.
Direct Contact				
Test Components	For nominal flight test: None For off-nominal launch: intact AUR or debris may fall within a couple hundred feet from the forward face of the launcher. Max footprint area of an intact AUR 90 ft^2.	For nominal flight test: None For off-nominal BELS launch • At SNI: None • At Meck or Wake: intact AUR or debris may fall within a couple hundred feet from the forward face of the launcher. Max footprint area of an intact AUR 90 ft^2.	One booster stage would splash down into the ocean per flight test. Approximate dimensions: 17 ft long x 3 ft diameter.	One booster stage and the payload would splash down into the ocean per flight test. Approximate dimensions: Stage 2 = 6 ft long x 3 ft diameter Payload = 9 ft long x 3 ft diameter

Stressor	Launch Site	Nearshore Waters	Stage 1 Booster Drop Zones in BOA	Stage 2 Booster Drop and Payload Impact Zones in BOA
Hazardous Materials				
Chemicals or Debris from Test Components	For nominal flight test: None For off-nominal BELS launch: introduction of AUR materials onto land, including rocket motor, propellant, battery electrolytes, residual explosives, and heavy metals. All visible AUR or debris would be cleaned up.	For nominal flight test: None For off-nominal BELS launch at Meck or Wake: possible introduction of AUR materials into shallow nearshore waters, including rocket motor, propellant, battery electrolytes, residual explosives, and heavy metals. All visible AUR or debris would be cleaned up.	Introduction of launch vehicle materials into deep ocean waters, including rocket motors, unused propellant, battery electrolytes, and heavy metals. Components and materials expected to sink to the bottom or rapidly dilute.	Introduction of launch vehicle and payload materials into deep ocean waters, including rocket motor, unused propellant, battery electrolytes, residual explosives, and heavy metals. Components and materials expected to sink to the bottom or rapidly dilute.
Human Activity and Equipment Operation				
Construction and Construction Equipment	Operation of concrete trucks and other construction equipment during pad or footer construction or modification. Estimated duration less than 4 weeks.	N/A	N/A	N/A
Test Support Equipment Operation	Up to 100 test personnel would be on-site for up to 4 weeks for launch activities. Pre- and post-flight test operation of several large trucks and personnel vehicles. Potential placement of temporary mobile facilities.	N/A	N/A	N/A

Stressor	Launch Site	Nearshore Waters	Stage 1 Booster Drop Zones in BOA	Stage 2 Booster Drop and Payload Impact Zones in BOA
Vessel Traffic	N/A	Barge or other transport vessel traffic typical of installation operations at launch locations. All vessels used for personnel and equipment operations would use established designated harbors or mooring points.	Support ship may transit area on route to payload impact site.	Operation of target raft and up to 12 self-stationing sensor rafts with small trolling motors, deployed near the payload target site from a support ship and recovered post-flight test. The largest support vessel would be approximately 300 ft long with a 20 ft draft and would remain on station for up to 2 weeks. There is no intention to anchor during this time.

Acronyms and Abbreviations: AUR = All Up Round Missile, BELS = Box Erector Launch System, BOA = Broad Ocean Area, dB = decibel(s), ft = feet, ft^2 = square feet, N/A = Not Applicable, re = referenced to, SNI = San Nicolas Island, µPa = micropascals

E

Agency
Correspondence

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APPENDIX E. AGENCY CORRESPONDENCE

Appendix E will contain correspondence sent between United States Army Space and Missile Defense Command, the Navy, the Army, and United States Government and Republic of the Marshall Islands agencies with respect to participation in development of the Supplemental Environmental Assessment / Overseas Environmental Assessment and regulatory compliance requirements.

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F

List of Preparers

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APPENDIX F. LIST OF PREPARERS

The JFC Supplemental EA/OEA was prepared collaboratively by the Navy, Army, USASMDC, and contractor support staff. **Table F-1** lists the U.S. Government personnel and contractor staff who were primarily responsible for preparing or were directly responsible for reviewing this document.

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