

Draft

ENVIRONMENTAL ASSESSMENT

Joint Logistics Over The Shore, Maritime
Prepositioning Force, and Field Exercise Training
Marine Corps Base Camp Pendleton
San Diego County, California



United States Department of the Navy

May 2014



1 **DRAFT**
2 **ENVIRONMENTAL ASSESSMENT**

3 **JOINT LOGISTICS OVER THE SHORE, MARITIME PREPOSITIONING FORCE,**
4 **AND FIELD EXERCISE TRAINING AT MARINE CORPS BASE CAMP PENDLETON**
5 **SAN DIEGO COUNTY, CALIFORNIA**

6 **ABSTRACT**

7 **Lead Agency for the EA:** United States Department of the Navy
8 **Title of Proposed Action:** Joint Logistics Over the Shore, Maritime Prepositioning Force,
9 and Field Exercise Training
10 **Affected Region:** San Diego County
11 **Designation:** Environmental Assessment

12 The Commander, United States Pacific Fleet has prepared this Environmental Assessment (EA) in
13 accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code §§
14 4321-4370h); the Council on Environmental Quality Regulations for Implementing the Procedural
15 Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508); Department of the
16 Navy Procedures for Implementing NEPA (32 CFR Part 775); Chief of Naval Operations Instruction
17 5090.1D (January 10, 2014); and Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26,
18 2013. The Proposed Action consists of an increase in amphibious training exercises at Marine Corps Base
19 (MCB) Camp Pendleton, situated approximately 40 miles (64 kilometers) north of the City of San Diego,
20 California. Proposed amphibious training exercises would be similar to existing amphibious training, but
21 at an increased annual tempo and covering a larger area.

22 This EA analyzes two action alternatives (i.e., Alternatives 1 and 2), and the No Action Alternative.
23 Under Alternative 1, existing amphibious training exercises would continue to occur on Red, Gold, and
24 Green beaches and associated inland training areas, and within and adjacent to the Del Mar Boat Basin,
25 but at a higher annual tempo (an increase of approximately 25 percent) as compared to existing
26 conditions. The San Mateo Campground could be closed for approximately 30 days each calendar year to
27 support proposed amphibious training exercises. Alternative 2 would be the same as Alternative 1, except
28 Alternative 2 would also include the use of White Beach for amphibious training exercises. The No
29 Action Alternative assumes the continuation of existing amphibious training exercises with no increase in
30 annual tempo or training area. This EA includes a detailed analysis of the Proposed Action's potential
31 environmental effects on the following resources: geological resources, water resources, biological
32 resources, land use, cultural resources, air quality, transportation and circulation, socioeconomics, and
33 hazardous materials and wastes

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41 **May 2014**

EXECUTIVE SUMMARY

1 This Environmental Assessment (EA) has been prepared in accordance with the National Environmental
2 Policy Act (NEPA) of 1969 (42 United States Code §§ 4321-4370h); the Council on Environmental
3 Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of
4 Federal Regulations [CFR] Parts 1500-1508); U.S. Department of the Navy (Navy) Procedures for
5 Implementing NEPA (32 CFR Part 775); Chief of Naval Operations Instruction 5090.1D (January 10,
6 2014) *Environmental Readiness Program Manual*, and Marine Corps Order P5090.2A, Change 3,
7 Chapter 12, dated August 26, 2013, *Environmental Protection and Compliance Manual*.

8 This EA has been prepared to analyze the potential environmental impacts resulting from the proposed
9 increase in amphibious training exercises at Marine Corps Base (MCB) Camp Pendleton. Proposed
10 amphibious training exercises (Joint Logistics Over the Shore [JLOTS], Maritime Prepositioning Force
11 [MPF], Field Exercise Training [FEX], and Large Scale Exercises [LSEs]) would be similar to existing
12 amphibious training, but at an increased annual tempo and covering a larger area. This EA addresses the
13 potential environmental impacts of the No Action Alternative, Alternative 1, and Alternative 2.

14 PURPOSE AND NEED FOR THE PROPOSED ACTION

15 The purpose of executing amphibious training exercises is to provide an opportunity for Navy, Marine
16 Corps, and Army personnel to gain and improve amphibious warfighting competencies at a west coast
17 location that allows for the focused assemblage and execution of logistics movement from the offload to
18 locations inland. These exercises would also provide the Navy and the Marine Corps an opportunity to
19 integrate as an amphibious warfare team to move Marines from ships afloat to inland areas to support the
20 Range of Military Operations associated with amphibious warfare training.

21 The Proposed Action is needed for Navy, Marine Corps, and Army units to conduct repetitive and
22 realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training
23 exercises would allow military commands to practice their individual skills as well as prepare for joint
24 operations, where multiple units, multiple commands, and multiple services work together under a single
25 commander in a realistic setting. The training aims to validate, enhance, and refine military tactics,
26 techniques, procedures, and doctrine for these operations, which ultimately provides the United States
27 military the capability to move combat power across the surf zone, on to land, and to inland areas.

28 Training in robust exercise scenarios is vital to hone warfighting skills and maintain and improve
29 personnel proficiency. Because amphibious operations are inherently dangerous (conducted in potentially
30 high sea states and across the surf zone onto potentially hostile territory), training in a realistic setting is
31 critical to maximizing the safety of personnel conducting amphibious training exercises. Furthermore,
32 Navy, Marine Corps, and Army units need to conduct these repetitive and realistic training exercises at a
33 west coast location that can accommodate proposed amphibious training exercises and projection of
34 forces inland across the Marine Corps Installations West region.

35 NO ACTION ALTERNATIVE

36 The No Action Alternative (i.e., the continuation of existing conditions) would allow for the continuation
37 of amphibious logistic training exercises (JLOTS, MPF, and FEX) of the same types, without change in
38 the nature or scope of military activities, centered on Red and Gold beaches and including the Del Mar
39 Boat Basin and existing inland training areas. The No Action Alternative would also provide for the
40 continuation of LSEs in the Green Beach area and associated existing inland training areas. Continuation
41 of the No Action Alternative may result in a reduction in the operational readiness of joint U.S. military
42 forces related to large-scale amphibious training and logistical support. The No Action Alternative is

1 required by CEQ regulations as a baseline against which the impacts of the action alternatives are
2 compared.

3 **ALTERNATIVE 1**

4 Under Alternative 1, amphibious training exercises would continue to occur on Red, Gold, and Green
5 beaches and associated inland training areas, and within and adjacent to the Del Mar Boat Basin, but at a
6 higher annual tempo (an increase of approximately 25 percent) as compared to existing conditions. The
7 San Mateo Campground could be closed for approximately 30 days each calendar year to support
8 proposed amphibious training exercises. As part of Alternative 1, emerging platforms and new
9 technologies would be integrated into future exercises. In addition, ship-to-ship refueling operations
10 would occur more than 3 nautical miles (5.6 kilometers) offshore.

11 **ALTERNATIVE 2**

12 Implementation of Alternative 2 would be the same as described under Alternative 1, except Alternative 2
13 would also include the use of White Beach for amphibious training exercises.

14 **AGENCY CORRESPONDENCE AND PUBLIC INVOLVEMENT**

15 *This section to be updated following completion of the Draft EA public review period.*

16 **SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

17 Potential environmental impacts have been analyzed in detail for the following resource areas: geological
18 resources, water resources, biological resources, land use, cultural resources, air quality, transportation
19 and circulation, socioeconomics, and hazardous materials and wastes. Table ES-1 summarizes the
20 environmental consequences, permits, and the mitigation measures for the No Action Alternative,
21 Alternative 1, and Alternative 2, for each resource area. The mitigation measures presented under the No
22 Action Alternative have been, and will continue to be integrated into each amphibious training exercise.
23 Notably, all training activities would continue to be consistent with the Riparian Biological Opinion (U.S.
24 Fish and Wildlife Service 1995). Chapter 3 provides a detailed discussion of the environmental
25 consequences for those resources analyzed in detail. As summarized in Table ES-1, with the application
26 of identified mitigation measures, continuation of the No Action Alternative, or implementation of
27 Alternative 1 or Alternative 2 would not result in significant impacts to any resource area.

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| <p>Geological Resources</p> | <p>Temporary and minor impacts to marine sediments from anchors and surf zone/beach activities. Temporary, localized changes in beach contours and topography. Temporary, minor increase in erosion potential from limited grading and foot/vehicle disturbance.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Any area excavated on the beach would be filled in at the conclusion of the exercise. 2. Vehicles, personnel, and equipment would be limited to existing roads and previously compacted and developed areas. 3. If amphibious training exercises disturb more than 1.0 acre (0.4 ha), a Construction General Permit would be obtained and the provisions of the permit would be implemented. 4. All erosion and sediment control measures would be inspected and maintained to ensure proper integrity and function during the entire training activity period. All stabilization and structural controls would be inspected after any major storm. Any damage would be repaired, and the controls would be maintained for optimum performance. 5. Disturbed slopes or other graded features would be properly stabilized. Disturbed areas would be protected with certified weed-free straw wattles or geotextile fabric. Whenever possible, grading would be phased to limit disturbed ground, soil exposure, and sediment runoff/fugitive dust potential. Drain inlets would be protected using gravel bags or straw wattles. No plastic monofilament materials would be used. Check dams would be used to reduce runoff velocities where necessary. 6. The exercise proponent would employ dust abatement measures (e.g., wetting of soils) within the Base Camps to minimize fugitive dust emissions during training exercises. Spraying would be done lightly to avoid the accumulation of surface water. 7. Tent Camps, Life Support Areas, and vehicle laydown area entrances and equipment laydown areas would be stabilized with aggregate. Steel ribbed plates may be used in addition to aggregate. | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to geological resources in this area.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

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| | <p>8. Any straw wattles, straw or hay bales used would be certified weed-free. All erosion control seed mixes would consist of native plant species. No plastic monofilament materials would be used.</p> <p>9. Any dirt piles would be covered with tarps, plastic, or geotextile fabric with the edges sealed with sandbags, bricks, lumber, etc. to minimize erosion. No plastic monofilament materials would be used.</p> <p>10. Site-specific BMPs would be implemented to minimize erosion and sedimentation impacts. These BMPs would be implemented to ensure that any stockpiled soil would not flow into nearby surface waters as a result of a high intensity rain event.</p> <p>11. Elements utilized as part of erosion control BMPs would be evaluated before, during, and after rain events. Appropriate actions would be taken if BMPs are found to be inadequate or ineffective. Damaged or worn silt fences, wattles, gravel bags, etc. would be replaced.</p> <p>12. All ground transport of vehicles and personnel would be restricted to existing ranges, roads, and off-road areas as authorized in Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures (MCIWEST-MCBCAMPENO 3500.1).</p> | | |
| <p>Water Resources</p> | <p>Suspended sediment and localized increases in turbidity generated from surf zone activities. Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter marine waters; however, spill potential would be reduced/eliminated through mitigation measures. No permanent increase in impervious surfaces. Potential for erosion to impact water quality.</p> <p>Permits: The following agency permits or documentation and their associated conditions have been and would continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> Clean Water Act Section 401 Water Quality Certification (via the San Diego RWQCB) Clean Water Act Section 404 & Rivers and Harbors Act Section 10 (via the USACE) CCND from the CCC | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. At-sea refueling would result in potential for fuel spills; however, spill potential would be reduced/eliminated through mitigation measures.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the</p> | <p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to water resources in the White Beach area.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for Alternative 1.</p> |

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| | <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. In-water construction activities would abide by Section 401, 404, and 10 permit provisions. 2. Areas for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants would be located above the ordinary high water mark. Materials that could potentially impact stormwater runoff would be stored in lockers, on pallets, inside rubber berms, indoors, or under a cover. Material storage areas would be located away from storm drains and surface waters. 3. The exercise proponent would be responsible for spill prevention and proper hazardous material storage and handling (secondary containment), and must comply with the Spill Prevention Control and Countermeasure Plan (Navy 2013a). The unit would keep a Petroleum Oil Lubricants spill kit on site. If a hazardous material spill were to occur, the unit would be responsible for their own hazardous material accidents in accordance with applicable federal, military, state, and local laws and regulations including clean up, and associated costs. For response and reporting, they would follow the MCB Camp Pendleton Integrated Contingency Plan guidance, available by contacting MCB Camp Pendleton Environmental Security Spill Prevention and Planning Branch at 760-725-9743/9768. All spills would be reported immediately to the Spill Prevention and Planning Branch, and only this Branch would make the appropriate regulatory reporting notifications for spill incidents. 4. The exercise proponent would obtain a Graywater Permit from MCB Camp Pendleton Environmental Security if a graywater disposal (percolation pit) is warranted for the exercise. The following measures would be adhered to: <ol style="list-style-type: none"> A. The requesting unit would submit a completed graywater application to MCB Camp Pendleton Environmental Security to initiate the environmental review process. B. The unit would contact the MCB Camp Pendleton Environmental Security Wastewater Branch at 760-725-0141 to arrange for percolation testing and to | <p>No Action Alternative and as follows:</p> <ol style="list-style-type: none"> 7. To minimize the potential for spills during at-sea refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C, <i>Environmental Protection Program</i> and planning procedures and instructions such as those outlined in 33 CFR 156.150. | |

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| | <p>obtain a Graywater Permit and provisions (e.g., percolation pit dimensions).</p> <p>C. The exercise proponent would follow the conditions outlined in the approved Graywater Permit.</p> <p>D. During the exercise, if the percolation pit fails to drain, or overfills, the unit would contact the Facilities Maintenance Department at 760-725-1732 for assistance.</p> <p>5. Fueling and maintenance of equipment would not take place closer than 100 ft (30 m) to surface water drainages.</p> <p>6. The exercise proponent would ensure that all trash and debris resulting from the exercises would be properly disposed of and would not be discarded onsite.</p> | | |
| <p>Biological Resources</p> | <p>Impacts to marine flora and fauna resulting from movement or anchoring of vessels and surf zone activities would be temporary and minor. Small fish and invertebrates would be subject to mortality from the pumps used for the Offshore Petroleum Discharge System and Amphibious Bulk Liquid Transfer System. Potential for injury or mortality to fish in the immediate area (< 328 ft [100 m]) from pile driving. Potential for harassment to marine mammals. Potential for direct and indirect impacts to kelp and eelgrass by vessels, amphibious vehicles, and turbidity. Direct impacts to special status species and their habitat would be avoided.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. All training activities would continue to be consistent with the Riparian Biological Opinion (U.S. Fish and Wildlife Service 1995). 2. A standing watch for marine mammals and sea turtles would be present during all Elevated Causeway installation/removal activities. 3. Before the start of pile driving each day, after each break of more than 30 minutes, and if any increase in the intensity is required, the Navy would use a ramp-up procedure. The procedure involves a slow increase in the pile driving to allow animals in the area to disperse. 4. Consistent with the HSTT Proposed Rule (NMFS 2013a) and the HSTT Letter of Authorization (NMFS 2013b), | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. The higher annual training tempo would result in a greater potential for impacts to habitats, communities, wildlife, and special status species; however, spill potential would be reduced/eliminated through mitigation measures. At-sea refueling would result in the potential for temporary impacts to marine biological resources.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1. The additional activities and the inclusion of White Beach in amphibious training exercises would not have a significant impact on marine or terrestrial biological resources in the White Beach area.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative, and would also include these White Beach-specific measures:</p> <ol style="list-style-type: none"> 17. Consistent with current range regulations, military vehicle operations transiting parallel to White Beach during tern and plover breeding season would keep one wheel in the water to minimize potential impacts to these species. 18. To the maximum extent possible, vehicles and personnel accessing the beach at White Beach during the period of March 1 to September 15 shall follow a route along the base of the northerly bluff to maintain the maximum distance from the tern |

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| | <p>Elevated Causeway pile driving would cease in the event that a marine mammal is sighted within a 180 ft (55 m) radius of the pile, and would not resume until the animal has voluntarily left the area.</p> <p>5. Mitigation and monitoring measures as addressed in the HSTT EIS/Overseas EIS (Navy 2013b) and associated HSTT Letter of Authorization to take marine mammals (NMFS 2013a, b) and BO (NMFS 2013c) would be implemented. The sighting and corresponding information would be logged per the requirements of the HSTT BO (NMFS 2013c).</p> <p>6. Visual reconnaissance would be used to avoid kelp.</p> <p>7. Before conducting the first exercise under the proposed action, an eelgrass survey will be conducted in the DMBB to provide a pre-action baseline. Since there are multiple exercises associated with the action, a single “post-construction survey” would be conducted at the conclusion of the USACE permit period and used to determine whether there has been any net effect of the proposed increase in activity on eelgrass.</p> <p>8. Consistent with the HSTT EIS and previous consultations between the Navy and NMFS concerning potential effects of Elevated Causeway pile driving on sea turtles, pile driving would not occur if/when a sea turtle is observed within 180 ft (55 m) from the pile. This assures that sea turtles would not be exposed to waters ensonified (i.e., filled with sound) to ≥ 180 dB¹. If a sea turtle is observed within this buffer, pile driving activities would be halted and would not resume until the animal has voluntarily left the area.</p> <p>9. Use of any petroleum, cleansers, substrate, or debris that could spill into riparian areas or the Pacific Ocean would be avoided.</p> <p>10. Vehicle access and movement would occur in compliance with Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating</p> | | <p>colony.</p> <p>19. Vehicle operations, inside fenced areas on the edge of the bluff between Aliso and French Creeks (White Beach), are not authorized between March 1 and September 15.</p> <p>20. Upon entering the beach from Camp Del Mar vehicles shall transit in a direct line along a marked corridor bordering the southern edge of the Santa Margarita Endangered Species Management Zone before heading up-coast. During returns, vehicles shall proceed along the same marked corridor. During the breeding season, amphibious tracked vehicles shall not traverse the Santa Margarita Endangered Species Management Zone in excess of a monthly average of 20 traverses per day (one traverse equals one round trip to and from Camp Del Mar).</p> |

¹ Root mean squared sound pressure level, with dB referenced to one microPascal at 3.28 ft (1 m).

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| | <p>Procedures (MCIWEST-MCBCAMPENO 3500.1).</p> <ol style="list-style-type: none"> 11. All project-related activities would avoid the destruction, and minimize the disturbance of active nests (i.e., nests with eggs or chicks). 12. Training activity and disturbances to vegetation would be avoided to the greatest extent practical. Removal of native vegetation (e.g., riparian or coastal sage scrub vegetation) is not permitted due to the potential presence of federally protected species. 13. Riparian Habitat: <ol style="list-style-type: none"> A. Dust production would be minimized in or adjacent to riparian areas. B. Excessive noise (above 60 dB [A-weighted] equivalent continuous sound over one hour) in or adjacent to riparian areas would be avoided to the maximum extent practical. C. Amphibious tracked vehicles shall traverse the management zones while maintaining both tracks in the water at all times. 14. Wildfires would be prevented by exercising care when driving and by not parking vehicles in grass where catalytic converters could ignite the vegetation. No smoking or disposal of cigarette butts would take place within vegetated areas. 15. Environmental Procedures in MCIWEST-MCBCAMPENO 3500.1: The following Environmental Considerations and Restrictions would be implemented: <ol style="list-style-type: none"> A. Estuarine/Beach Endangered Species Management Zones. In accordance with the Estuarine and Beach Ecosystem Conservation Plan (MCB Camp Pendleton 2012a) and to protect the California least tern, western snowy plover, light-footed clapper rail, and tidewater goby, the restrictions listed below apply when operating within the following areas: all coastal lagoons and estuaries; marshes and salt flats associated with San Mateo Creek, San Onofre Creek, Las Flores Creek, "Hidden Creek" Grid Coordinates 580818, Aliso Creek, French Creek, and Cocklebur Creek watersheds; and the Santa Margarita Endangered Species Management Zone: <ol style="list-style-type: none"> i. Obtain authorization from Environmental | | |

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| | <p>Security before entering any lagoon or estuary, marsh, mud/salt flat, or posted nesting area. If any creek and/or lagoon is flowing to the ocean, vehicles may cross the creek only at the ocean's edge. Bivouacking and digging of fighting positions are prohibited in the vicinity of the Estuarine/Beach Endangered Species Management Zones during the period of March 1 to September 15.</p> <p>ii. Between March 1 to September 15, all activities involving smoke, pyrotechnics, loud noises, blowing sand, and large groupings of personnel (14 or more) would remain at least 984 ft (300 m) away from fenced or posted nesting areas. All other activities would be kept at least 16 ft (5 m) from these areas.</p> <p>iii. Foot traffic involving less than 14 personnel would be kept as far away as possible, and approach no closer than 16 ft (5 m) to posted nesting areas. Unit hikes would remain on the hard packed sand, as close to the ocean water edge as possible. When passing posted nesting areas, to the maximum extent practicable, noise would be minimized.</p> <p>iv. Vehicle and equipment operations in the management zones would be kept to a minimum between March 1 to September 15. All vehicles would travel on hard packed sand and would not approach posted nesting areas or lagoons closer than 16 ft (5 m). Speeds would not exceed 25 mph (40 kph). Tracked vehicles would travel as close to the water (upper few inches of water) as possible, year round, in the Santa Margarita Endangered Species Management Zone. Vehicle operations, inside fenced areas on the edge of the bluff between Alison and French Creeks (White Beach), are not</p> | | |

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| | <p>authorized.</p> <ul style="list-style-type: none"> v. Boat operations, (including Landing Craft Air Cushions) are not authorized in lagoons and estuaries. Landing Craft Air Cushions shall not enter the management zones between March 1 to September 15, except when entering or exiting seaward; and on return, shall exit the ocean heading directly up to the facility access ramp. <p>B. Coastal California gnatcatcher, least Bell’s vireo, southwestern willow flycatcher, and arroyo toad avoidance measures. For the conservation of these species, the following measures would be followed for training activities in coastal sage scrub and riparian habitats:</p> <ul style="list-style-type: none"> i. Extreme caution beyond that required by the Fire Danger Rating is necessary when using pyrotechnics and when conducting other activities likely to cause a fire. ii. Foot traffic is authorized year round on existing roads, trails, and creek crossings. Consult with Environmental Security before cutting/removing vegetation. iii. Vehicles operating in the vicinity of creeks, rivers, or drainages would use existing roads, trails, and established creek/river crossings. Vehicle traffic on roads in arroyo toad habitat between March 15 and August 31 would be minimized to the maximum extent practicable. iv. Consult with Environmental Security before bivouacking, cutting/removing vegetation, trenching, grading, filling, or conducting engineering operations in or adjacent to creek/river bottom areas. v. Dust produced in or adjacent to creeks and rivers would be minimized to the maximum extent practicable. <p>C. Vernal Pool Avoidance Measures. For the conservation of vernal pools, the following measures would be followed for training exercises in identified</p> | | |

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| | <p>vernal pool habitat:</p> <ul style="list-style-type: none"> i. Foot traffic is authorized year round. Digging, including construction of fighting positions is prohibited in vernal pools. ii. Vehicle/equipment operations near known vernal pool areas would be kept on existing roads, year round. Contact Environmental Security before conducting activities involving soil excavation, filling, or grading. iii. Bivouac/Command Post/Field support (e.g., showers, messing, fueling, water purification, etc.) activities would be kept to at least 164 ft (50 m) from identified vernal pools. <p>16. Per the Aviation Operations section of MCIWEST-MCBCAMPENO 3500.1, the following Environmental Considerations and Restrictions would apply:</p> <ul style="list-style-type: none"> A. Endangered Species Nesting Areas. During the period from March 1 through September 15, certain airspace within R-2503A is off-limits to all aircraft to protect the nesting and feeding habitat of endangered bird species (least tern/snowy plover nesting areas). This off-limits airspace has been identified from the surface to 300 ft (91 m) above ground level and 984 ft (300 m) laterally from the following areas: <ul style="list-style-type: none"> i. Beach Section G. Margarita of Blue Beach, inland to the Interstate 5 freeway, and from the bluffs north of the Santa Margarita River to the bluffs south of the river near the 21 Area. ii. Aircraft would not fly below 300 ft (91 m) above ground level over river mouths, riverbeds and streams, estuaries and lagoons other than established landing sites and terrain flight routes. | | |
| Cultural Resources | Cultural sites would be avoided. If potential cultural resources are uncovered, all training would stop immediately and the MCB Camp Pendleton Environmental Security Cultural Resources Management Branch would be notified. | Impacts would be the same as those presented under the No Action Alternative as cultural sites would continue to be avoided. | Impacts would be the same as those presented under the No Action Alternative as cultural sites would continue to be avoided. |

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| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| | <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. The locations of all proposed exercise elements would avoid impacting known cultural resources, and would be identified and used in compliance with MCIWEST-MCBCAMPENO 3500.1. 2. All personnel would stay on established dirt roads, paths, and routes; no activities or personnel would be allowed within the brush areas adjacent to dirt roads. No ground disturbing activities would be permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths. 3. Exercise planners and all participants shall be briefed on access to range and training areas before the exercise taking place. This includes using existing dirt roads per MCIWEST-MCBCAMPENO 3500.1 and in accordance with the Environmental Operations Map. As per MCIWEST-MCBCAMPENO 3500.1 the following shall remain in effect: <ol style="list-style-type: none"> A. Foot traffic is authorized, year round. Digging, including construction of fighting positions, is prohibited at known archaeological sites. B. Vehicle/equipment operations shall be kept on existing roads through known archaeological sites, year round. Contact Environmental Security before conducting activities involving mechanical soil excavation, filling, or grading in the vicinity of known archaeological sites. C. Bivouac/command and post/field support activities (e.g., showers, messing, fueling, water purification, etc.) shall be kept at least 164 ft (50 m) from identified archaeological sites. D. When conducting operations, if archaeological materials are discovered on the ground or below soil surfaces: <ol style="list-style-type: none"> i. Avoid disturbing any archaeological materials; ii. Notify Environmental Security as soon as possible (with the exact grid coordinates, if possible, and site description); and | <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------|
| | <ul style="list-style-type: none"> iii. Do not remove materials from the area. E. If human bone material (to include fragments) is discovered during any operation, the area would be immediately evacuated, leaving the remains intact. Notify Range Control (LONGRIFLE) as soon as possible. 4. In the event that archaeological materials (e.g., shell, wood, bone, or stone artifacts) are found or suspected during training, training would be halted in the area of discovery and the MCB Camp Pendleton Environmental Security Cultural Resources Management Branch would be notified at (760-725-9738), as soon as practicable (but no longer than 24 hours after the discovery). Training at the discovery site would not proceed until the MCB Camp Pendleton Archaeologist has the opportunity to evaluate the find and gives permission to resume training exercises. 5. Bivouac/command and post/field support activities or ground disturbing activities are authorized in Sierra 1. The Sierra Training Area now includes Sierra 4, which was previously identified as a Natural Resources buffer area and not subject to training activities. The conditions for use of the Sierra Training Area include the following: <ul style="list-style-type: none"> A. Adherence to the Programmatic Agreement for the MV-22 EA, including a buffer of 350 ft (107 m) around an archaeological site. B. The Non-Impact Area boundary encompassing the existing Treated Wastewater Percolation Ponds be expanded to include CA-SDI-16283 in its entirety. C. MCIWEST-MCBCAMPENO 3500.1 remains in effect as ground-disturbing activities and vehicular use would be restricted during training within CA-SDI-13324 and CA-SDI-13325. D. A monitoring and discovery plan would be required and approved by the Cultural Resources Management Branch. E. All ground-disturbing activities within Sierra 1 below 19.7 inches (50 centimeters) would be monitored by a professional archaeologist and a Native American monitor (both approved by the Cultural Resources Management Branch). F. A monitoring report would be submitted to the CA | | |

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>SHPO upon completion of training activities. G. Sites CA-SDI-13324, CA-SDI-13325 and CA-SDI-16282 would be included in the on-going conditions assessment monitoring for sites within training areas.</p> | | |
| <p>Land Use</p> | <p>Amphibious training exercises at Green Beach and within the State Lease Areas would necessitate the temporary closure of coastal elements of the State Lease Areas (i.e., Trestles Beach, Surf Beach and San Onofre Bluffs, and associated trails) and the Marine Corps Community Services San Onofre Beach facility, resulting in the temporary displacement of aquatic recreation in these areas. Potential course alteration of recreational boats. Closure of the San Mateo Campground for up to 15 consecutive days each calendar year. Temporary closure of portions of the bike path passing through MCB Camp Pendleton.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Before each exercise occurring within the State Lease Areas, the California Department of Parks and Recreation would receive notice. 2. Immediately before an amphibious training exercise, MCB Camp Pendleton personnel would perform a safety and security sweep to ensure the training area is clear of all non-participating persons. 3. Exercise proponents would coordinate (via the California Department of Parks and Recreation and the California Coastal Commission) in advance to minimize impacts to organized surfing events that are regularly held at Trestles Beach. 4. When planning information supports doing so, exercise proponents would strive to notify the California Department of Parks and Recreation at least six months' in advance of an exercise that would require the use (and therefore temporary closure) of the San Mateo Campground. 5. Bike path closure notifications would be posted in advance of closures. 6. In advance of amphibious training exercises, a Notice to Mariners would be released. | <p>The proposed increase in annual training tempo would result in an incremental increase in some of the impacts that currently occur under the No Action Alternative. Increase in temporary closures of certain segments of the State Lease Areas. These closures would be short-term, lasting only for the duration of the beach portion of the training activities. The bike path would be subject to temporary closure more often while training activities use/cross the bike path. Alternative 1 would increase the frequency and duration of San Mateo Campground closures. Campground closures could occur in support of one, or more than one exercise each calendar year, but are not anticipated to result in a cumulative closure of more than 30 days each calendar year.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Air Quality</p> | <p>No net increase in emissions.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Visible Emissions and Nuisance: <ol style="list-style-type: none"> A. Exercise participants shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period aggregating more than three minutes in any period of 60 consecutive minutes, which is darker in shade than Number 1 on the Ringelmann Chart (i.e., dark smoke). B. Exercise participants shall not discharge any quantity of air contaminant that may cause injury, detriment, or nuisance pursuant to San Diego Air Pollution Control District Rules 50 and 51; and for the 64 Area (South Coast Air Quality Management District Rules 401 and 402) mainly over the Base's property line (e.g., freeways, public roads, adjacent neighborhoods, ocean). 2. Temporary Power Supply Equipment: <ol style="list-style-type: none"> A. The unit would report all generators (regardless of size) to the MCB Camp Pendleton Environmental Security Air Quality Section (760-725-9756) for inclusion into MCB Camp Pendleton's Annual Tactical Support Equipment Inventory or into the South Coast Air Quality Management District's Annual Emission Inventory Report. B. The unit shall provide power generation equipment (i.e., generators) for supplemental or back-up power requirements. Base-owned, permitted generators shall not be utilized to provide supplemental/back-up power during amphibious training exercises. | <p>Under Alternative 1, emissions of criteria pollutants would increase by between 19% and 23%, as compared to the No Action Alternative. The increase in emissions would be below <i>de minimis</i> levels.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be the same as presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Transportation and Circulation</p> | <p>Short-term, localized and minor effects due to the temporary closure of portions of Old Highway 101 and Cristianitos Road. Possible impact on Interstate 5 traffic flow if passing motorists pause to observe exercise elements crossing Interstate 5 via the Basilone Road and/or Cristianitos Road overpasses.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Before commencing any training exercise that would involve exercise elements crossing over Interstate 5, MCB Camp Pendleton would issue a traffic advisory to Caltrans District 11 and the local media alerting motorists to the exercise, emphasizing the temporary presence of exercise elements on Interstate 5 freeway overpasses and the associated short-term impact to transportation. | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. Approximately 20 vehicles would use major regional transportation corridors up to four times per year.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative and as follows:</p> <ol style="list-style-type: none"> 2. To minimize potential traffic congestion resulting from the transport of personnel and materiel between Silver Strand Training Complex and MCB Camp Pendleton, road convoys would be broken into smaller elements, consisting of 3-5 vehicles. Convoy elements would depart at 15 to 30 minute intervals to minimize potential effects on traffic flow. Subject to operational requirements, convoy elements would be scheduled to avoid travel during peak commuting hours (i.e., 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). | <p>Impacts would be similar to those presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |
| <p>Socioeconomics</p> | <p>Maximum potential State Parks revenue loss of approximately \$100,000 per year due to temporary closure of San Mateo Campground. Minor loss in revenue to local businesses due to temporary closure of beaches and in-water recreation areas. Minor beneficial impact due to temporary employment of civilian contractors.</p> <p>Mitigation Measures: No additional mitigation measures have been identified for socioeconomics as the previously identified mitigation measures for land use would also minimize impacts to socioeconomic resources.</p> | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. The temporary closure of the San Mateo Campground for approximately 30 cumulative days each calendar year would result in a maximum potential State Parks revenue loss of approximately \$200,000 per calendar year.</p> | <p>Impacts would be similar to those presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table ES-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | |
| <p>Hazardous Materials and Waste</p> | <p>Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter soil and surface waters.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. To minimize the potential for spills during at-sea refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C, <i>Environmental Protection Program</i> and planning procedures and instructions such as those outlined in 33 CFR 156.150. 2. Installation Restoration sites would be avoided during training exercises. | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1. In addition, increased geographic scope of amphibious training would expand the probability for spills over a larger area.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Notes: % = percent; BMP = Best Management Practice; BO = Biological Opinion; CCC = California Coastal Commission; CCND = Coastal Consistency Negative Determination; dB = decibels; EIS = Environmental Impact Statement; ft = foot/feet; ha = hectare(s); HSTT = Hawaii-Southern California Training and Testing Activities; kph = kilometers per hour; LOA = Letter of Authorization; m = meter(s); MCIWEST-MCBCAMPENO = Marine Corps Installations West-Marine Corps Base Camp Pendleton Order; mph = miles per hour; NMFS = National Marine Fisheries Service; RWQCB = Regional Water Quality Control Board; SHPO = State Historic Preservation Office; USACE = U.S. Army Corps of Engineers.

LIST OF ACRONYMS AND ABBREVIATIONS

| | | | |
|------------------|------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------|
| % | percent | LSE | Large Scale Exercise |
| APE | area of potential effects | m | meter(s) |
| Army | U.S. Department of the Army | MCB | Marine Corps Base |
| | | MPF | Maritime Prepositioning Force |
| BMP | Best Management Practice | | |
| BO | Biological Opinion | N ₂ O | nitrous oxide |
| B.P. | Before Present | NAAQS | National Ambient Air Quality Standards |
| | | NAVFAC | Naval Facilities Engineering Command |
| CAA | Clean Air Act | Navy | U. S. Department of the Navy |
| CAAQS | California Ambient Air Quality Standards | NBG 1 | Naval Beach Group ONE |
| CARB | California Air Resources Board | NEPA | National Environmental Policy Act |
| CEQ | Council on Environmental Quality | NMFS | National Marine Fisheries Service |
| CFR | Code of Federal Regulations | NOAA | National Oceanic and Atmospheric Administration |
| CH ₄ | methane | | |
| CO | carbon monoxide | | |
| CO ₂ | carbon dioxide | NO ₂ | nitrogen dioxide |
| CO _{2e} | CO ₂ equivalent | NO _x | nitrogen oxides |
| CPF | Commander, United States Pacific Fleet | | |
| | | O ₃ | ozone |
| DoD | Department of Defense | OPNAVINST | Chief of Naval Operations Instruction |
| EA | Environmental Assessment | PM _{2.5} | particulate matter less than or equal to 2.5 microns in diameter |
| EFH | Essential Fish Habitat | | |
| EIS | Environmental Impact Statement | PM ₁₀ | particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter |
| EO | Executive Order | | |
| ESA | Endangered Species Act | | |
| FEX | Field Exercise | RWQCB | Regional Water Quality Control Board |
| ft | foot/feet | | |
| | | SO _x | sulfur oxide |
| GHG | greenhouse gases | | |
| | | UAV | Unmanned Aerial Vehicle |
| ha | hectare(s) | U.S. | United States |
| HSTT | Hawaii-Southern California Testing and Training Activities | USACE | U.S. Army Corps of Engineers |
| | | USC | United States Code |
| | | USEPA | U.S. Environmental Protection Agency |
| I MEF | I Marine Expeditionary Force | USFWS | U.S. Fish and Wildlife Service |
| | | USMC | United States Marine Corps |
| JLOTS | Joint Logistics Over the Shore | | |
| | | VOCs | volatile organic compounds |
| km | kilometer(s) | | |

DRAFT
ENVIRONMENTAL ASSESSMENT
PROPOSED JOINT LOGISTICS OVER THE SHORE,
MARITIME PREPOSITIONING FORCE, AND FIELD EXERCISE TRAINING
MARINE CORPS BASE CAMP PENDLETON
SAN DIEGO COUNTY, CALIFORNIA

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CHAPTER 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Commander, United States (U.S.) Pacific Fleet (CPF) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §§ 4321-4370h); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500-1508); U.S. Department of the Navy (Navy) Procedures for Implementing NEPA (32 CFR Part 775); Chief of Naval Operations Instruction (OPNAVINST) 5090.1D (January 10, 2014) *Environmental and Natural Resources Program Manual*, and Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26, 2013, *Environmental Protection and Compliance Manual*.

This EA has been prepared to analyze the potential environmental impacts resulting from conducting proposed amphibious training exercises at Marine Corps Base (MCB) Camp Pendleton. For the purposes of this EA, the term “amphibious” is generally defined to describe the projection of combat power ashore, followed by the ship-to-shore movement of supplies and personnel to sustain further operations. Proposed amphibious training would consist primarily of Joint Logistics Over the Shore (JLOTS), Maritime Prepositioning Force (MPF), Large Scale Exercises (LSEs), as well as other smaller scale exercises known as Field Exercises (FEXs), as explained later in this chapter. Throughout the balance of this EA, the all-encompassing phrase “amphibious training exercises” is used, when applicable, to describe all types of amphibious training exercises analyzed in this EA.

By using the best information currently available regarding training frequency, components, and duration, this EA analyzes the impacts of amphibious training exercises at MCB Camp Pendleton. This analysis will streamline NEPA documentation for future amphibious training exercises, which will facilitate regulatory compliance. In addition, this EA will increase operational flexibility by eliminating repetitive and redundant environmental analyses for each individual amphibious training exercise conducted at MCB Camp Pendleton.

1.2 PROJECT LOCATION

The proposed project area is located at MCB Camp Pendleton, the U.S. Marine Corps’ (USMC) major amphibious training center for the west coast. MCB Camp Pendleton encompasses over 125,000 acres (50,585 hectares [ha]) within the northern portion of San Diego County, approximately 40 miles (64 kilometers [km]) north of the City of San Diego (MCB Camp Pendleton 2012a). MCB Camp Pendleton is bordered to the northwest by Orange County, to the north and east by the City of San Clemente and the Cleveland National Forest, to the east by the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook, to the south by the City of Oceanside, and to the west by the Pacific Ocean.

The project would occur at MCB Camp Pendleton in the following existing training areas: offshore of and adjacent to as many as four training beaches (Red, Gold, Green, and White), from training beaches to inland range and training areas, and within and adjacent to the Del Mar Boat Basin (Figure 1-1).

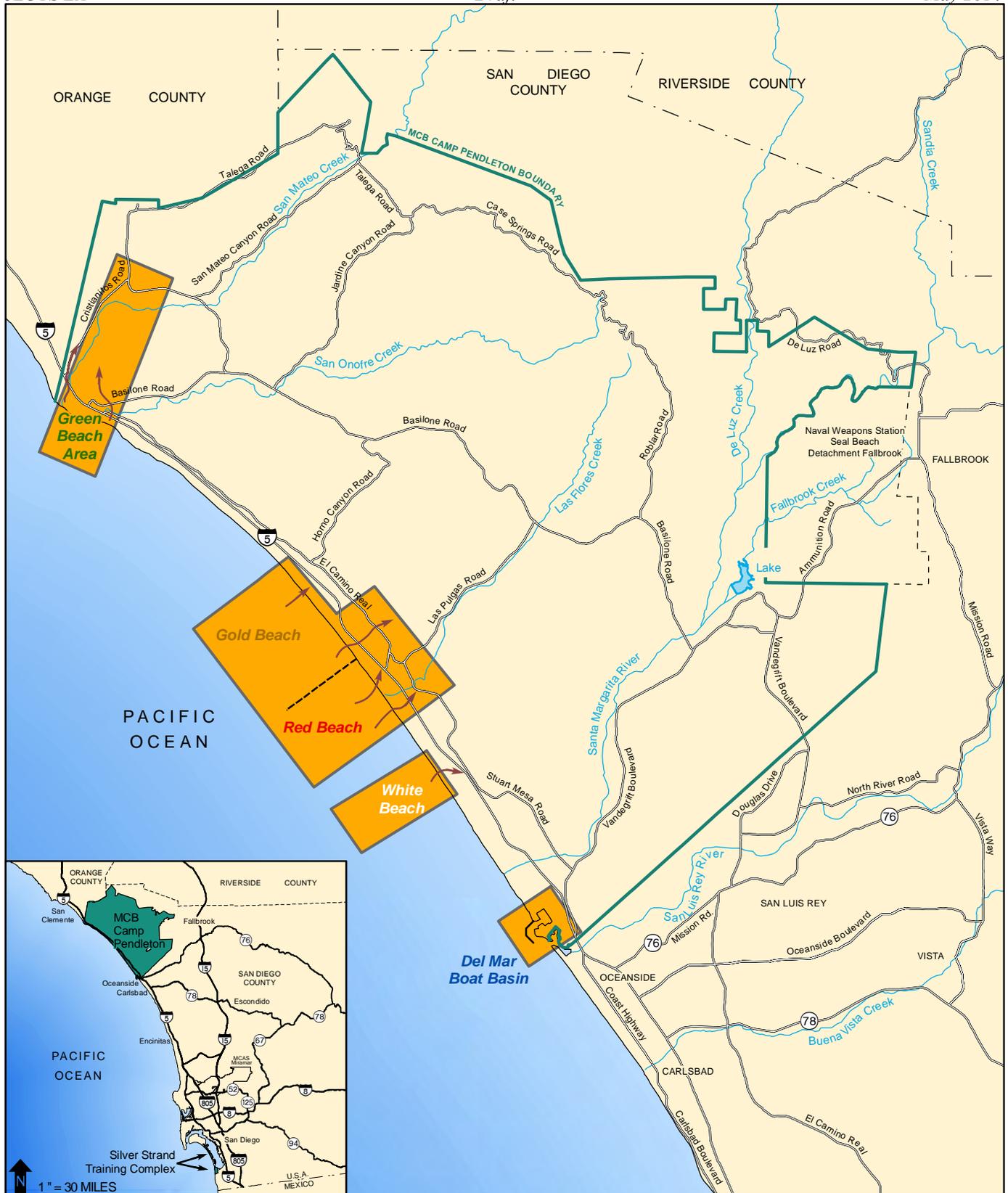


Figure 1-1
 General Location of the Proposed Action and
 Notional Depiction of Major Transit Corridors



1.3 PROJECT BACKGROUND

1.3.1 MCB CAMP PENDLETON AMPHIBIOUS EXERCISES

The mission of MCB Camp Pendleton is to operate an amphibious training base that promotes the combat readiness of operating forces by providing facilities, services, and support responsive to the needs of Marines, Sailors, and their families. MCB Camp Pendleton is the only west coast installation that has the unique and complete combination of space that can support multi-organizational, multi-dimensional amphibious training exercises. Proposed amphibious training would consist primarily of JLOTS, MPF, LSEs, as well as smaller scale FEXs, as described in the following sections.

1.3.2 SHIP-TO-SHORE MOVEMENT OF SUPPLIES

CPF supports littoral logistical training exercises such as U.S. Transportation Command's scheduled and coordinated JLOTS exercises and USMC MPF training. The primary supporting command in these exercises is Naval Beach Group ONE (NBG 1). In addition to their support of JLOTS and MPF amphibious training exercises, NBG 1 conducts FEXs to meet their own annual training requirements.

The movement of supplies and personnel from ship to shore to support military forces in or near combat areas has historically been difficult and time consuming. In areas that do not contain deep-draft fixed port facilities such as piers and docks, large ships cannot easily load/unload necessary supplies and personnel onto land. Logistics Over the Shore is the process of transporting cargo and equipment from ships to shore. The Navy, U.S. Department of the Army (Army), and Marine Corps have developed their unique as well as cooperative systems for satisfying their logistical needs in accordance with guidance publications and doctrine (USMC 2004 and Chairman of the Joint Chiefs of Staff 2005). The Navy, Army, and Marine Corps often work together in joint exercises (i.e., JLOTS exercises).

Proficiency in JLOTS is required under Joint Publication 4.0, *Joint Logistics*, and Joint Publication 4.01-6, *Joint Logistics Over-the-Shore*, which detail the required capability to execute this complex mission. Navy and Marine Corps leadership developed the MPF doctrine based on Navy Tactics, Techniques, and Procedures 3-02-3M, *Maritime Prepositioning Force Operations*, which discusses the methodology for conducting MPF operations. The USMC primarily uses the MPF process to offload equipment and supplies from MPF ships to establish a Marine Expeditionary Brigade ashore. USMC MPF operations are preferred in areas where deep draft ports are available; however, they also need to be able to operate in areas where deep draft ports are not available. Furthermore, the Navy conducts FEXs (smaller versions of JLOTS and MPF exercises) which include some but not all components of a full-scale JLOTS and/or MPF exercise. Regardless of the offload method used, the efficient delivery of containerized cargo and equipment is critical to the establishment of forces ashore.

The U.S. Transportation Command, located at Scott Air Force Base, schedules the JLOTS exercises. The U.S. Transportation Command is one of 10 unified commands of the Department of Defense (DoD), and this Command's mission is to provide air, land, and sea transportation for the DoD, in times of both peace and war. The location and timing of JLOTS exercises each year is variable and subject to last-minute changes due to real-world events (e.g., Operation Enduring Freedom, Operation Iraqi Freedom, and natural disasters [e.g., Haiti earthquake]), making it difficult to predict accurately where and when the next JLOTS exercise will occur.

1.3.3 LARGE-SCALE EXERCISES

LSEs, which incorporate amphibious operations, have been executed at MCB Camp Pendleton since the 1940s and continue to occur routinely. LSEs are typically composed of air, ground, and amphibious

1 training elements and occur at locations to include Red, Gold, and Green beaches, the Del Mar Boat
 2 Basin, the Sierra Training Area, existing access roads and ranges, and the San Mateo Campground.

3 **1.3.4 CURRENT AMPHIBIOUS TRAINING EXERCISE FREQUENCY AT MCB CAMP PENDLETON**

4 Full JLOTS exercises typically occur once every 3 to 5 years and last up to 90 days. On average,
 5 approximately 2,000 – 3,500 personnel take part in JLOTS training exercises. MPF exercises typically
 6 occur once every 2 years and last around 30 days, and include an average of approximately 600 – 1,500
 7 personnel. On average, LSEs occur quarterly and last 10 to 21 days and typically involve 1,000 – 3,000
 8 personnel. The most recently completed LSE was “Dawn Blitz”, conducted from June 15 – 30, 2013
 9 (USMC 2013a). On average, between 6 and 8 FEXs are conducted on an annual basis and last 7 to 14
 10 days and typically involve 30 – 800 personnel. The last JLOTS occurred in 2008 (JLOTS 08; June 25 to
 11 August 20), the last stand-alone MPF exercise occurred in 2011 (Pacific Horizon 11; March 2-14), and at
 12 least 18 FEXs have occurred since 2005.

13 Table 1-1 summarizes existing amphibious exercises at MCB Camp Pendleton. Section 2.2 provides a
 14 comprehensive description of the training elements associated with amphibious training exercises. On
 15 average, approximately 12 amphibious training exercises currently occur each year at MCB Camp
 16 Pendleton.

Table 1-1. Current Amphibious Training Exercise Frequency at MCB Camp Pendleton

| Exercise Type | Average Frequency | Average Duration | Average Personnel |
|---------------|----------------------|------------------|-------------------|
| JLOTS | Once every 3–5 years | 90 days | 2,000–3,500 |
| MPF | Once every 2 years | 30 days | 600–1,500 |
| LSE | 4 times a year | 10–21 days | 1,000–3,000 |
| FEX | 6–8 times a year | 7–14 days | 30–800 |

Notes: JLOTS = Joint Logistics Over the Shore, MPF = Maritime Prepositioning Force, LSE = Large Scale Exercise, FEX = Field Exercise

17 As an example of an MPF exercise, the I Marine Expeditionary Force (I MEF) conducts routine
 18 amphibious training at MCB Camp Pendleton with the Navy providing offload support for at least two
 19 exercises a year. These two offload exercises, designated as Pacific Horizon, are designed to exercise the
 20 USMC’s, specifically I MEF’s, littoral command, control and logistical support capabilities across the
 21 Range of Military Operations supported with Navy lighterage². This operation includes one or two MPF
 22 vessels to offload a specific inventory of military equipment onto a beachhead at MCB Camp Pendleton
 23 to support the mission of a Marine Air Ground Task Force that can respond to a wide variety of
 24 operations globally.

1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

25 The purpose of executing amphibious training exercises is to provide an opportunity for Navy, Marine
 26 Corps, and Army personnel to gain and improve amphibious warfighting competencies at a west coast
 27 location that allows for the focused assemblage and execution of logistics movement from the offload to
 28 locations inland. These exercises would also provide the Navy and the Marine Corps an opportunity to
 29 integrate as an amphibious warfare team to move Marines from ships afloat to inland areas to support the
 30 Range of Military Operations associated with amphibious warfare training.

² a typically flat-bottomed boat used in unloading or loading ships.

1 The Proposed Action is needed for Navy, Marine Corps, and Army units to conduct repetitive and
2 realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training
3 exercises would allow military commands to practice their individual skills as well as prepare for joint
4 operations, where multiple units, multiple commands, and multiple services work together under a single
5 commander in a realistic setting. The training aims to validate, enhance, and refine military tactics,
6 techniques, procedures, and doctrine for these operations, which ultimately provides the U.S. military the
7 capability to move combat power across the surf zone, on to land, and to inland areas.

8 Training in robust exercise scenarios is vital to hone warfighting skills and maintain and improve
9 personnel proficiency. Because amphibious operations are inherently dangerous (conducted in potentially
10 high sea states and across the surf zone onto potentially hostile territory), training in a realistic setting is
11 critical to maximizing the safety of personnel conducting amphibious training exercises. Furthermore,
12 proposed amphibious training exercises would be consistent with the designation of MCB Camp
13 Pendleton as the Marine Corps' premiere west coast location to support amphibious training.

1.5 ENVIRONMENTAL REVIEW PROCESS

14 The NEPA process helps the Navy arrive at the most informed decision. Informed decisions are based on
15 a candid and factual presentation of potential environmental impacts. These facts come from collecting
16 information on a variety of resource areas, which are potentially affected by the proposal, and by
17 identifying the type and extent of potential impacts resulting from the proposal. This information has been
18 compiled into this EA.

1.6 RESOURCE AREAS ANALYZED

19 In compliance with NEPA, CEQ regulations, and Navy and USMC procedures for implementing NEPA,
20 the description of the affected environment and environmental consequences focuses only on those
21 resources potentially subject to impacts. Accordingly, the discussion of the affected environment (and
22 associated environmental analyses in this EA) focuses on the following resource areas: geological
23 resources, water resources, biological resources, land use, cultural resources, air quality, transportation
24 and circulation, socioeconomics, and hazardous materials and wastes. Conversely, the resource areas
25 described below were not carried forward for analysis in this EA, as potential impacts were determined to
26 be negligible or non-existent.

27 *Utilities.* Implementation of the alternatives would not involve site improvements, construction of
28 facilities, or a permanent increase in personnel that would place an additional demand on electricity,
29 potable water, sanitary sewer, phone, or information technology at MCB Camp Pendleton. Therefore,
30 impacts to utilities from implementation of the alternatives would be negligible.

31 *Visual Resources.* During amphibious training exercises, civilians driving through MCB Camp Pendleton
32 on Interstate 5 and present in the State of California Parks and Recreation Long-Term Lease Area³
33 (hereafter referred to as the State Lease Areas), would be able to see elements of the exercises. However,
34 the exercises would be consistent with training exercises that have been occurring at MCB Camp
35 Pendleton for decades, and would not constitute a change to the visual environment, which is currently
36 already characteristic of a military training installation. Furthermore, under this effort no new permanent

³ As described in the 1971 Lease Agreement, *Agreement of Lease between the State of California Department of Parks and Recreation and the United States of America* (USA 1971).

1 structures would be constructed that might alter the existing visual environment. Therefore, impacts to
2 visual resources from implementation of the alternatives would be negligible.

3 *Noise.* Implementation of the alternatives would not involve permanent site improvements, construction
4 of permanent facilities, or a long-term increase in personnel, and would thus not create any new
5 permanent sources of noise. Amphibious training exercises would temporarily increase local noise levels;
6 however, the activity period would be limited and the training areas are located in remote locations on
7 MCB Camp Pendleton away from sensitive noise receptors, and noise levels would be consistent with
8 noise levels associated with a military training installation. Potential noise impacts to species from
9 amphibious training exercises are analyzed in the biological resources section of this EA; refer to Section
10 3.3.3. Therefore, impacts to the noise environment from implementation of the alternatives would be
11 negligible.

12 *Safety and Environmental Health.* Implementation of the alternatives would occur within the boundaries
13 of MCB Camp Pendleton, predominantly at beaches and existing inland training areas that are not
14 publically accessible. Before each exercise occurring on Green Beach or within the State Lease Areas, the
15 California Department of Parks and Recreation would receive notice in accordance with the 1971 Lease
16 Agreement (USA 1971). Per the 1971 Lease Agreement, the California Department of Parks and
17 Recreation would then be responsible for notification of closure and clearing of the affected training area.
18 Immediately before the amphibious training exercise, MCB Camp Pendleton personnel would perform a
19 safety and security sweep to ensure the training area is clear of all non-participating persons. All rules and
20 regulations governing range safety, range access, hazardous materials, and hazardous wastes would
21 continue to be followed, to include measures to minimize safety and environmental health risks. No
22 explosions and underwater demolitions would occur, and live-fire would continue to be limited to existing
23 designated inland training areas. Therefore, impacts to safety and environmental health from
24 implementation of the alternatives would be negligible.

25 *Environmental Justice.* Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice*
26 *in Minority Populations and Low-Income Populations*, requires federal agencies to consider human health
27 and environmental conditions in minority and low-income communities. The demographics of MCB
28 Camp Pendleton are generally representative of U.S. population demographics and do not constitute
29 disproportionately high minority or low-income populations. Amphibious training exercises would not
30 result in a permanent change to population ethnicities or age distributions. Therefore, there would be no
31 disproportionately high environmental or health impacts on low-income or minority populations from
32 implementation of the alternatives.

33 EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, helps ensure that
34 federal agencies' policies, programs, activities, and standards address environmental health and safety
35 risks to children. Amphibious training exercises would occur within existing range and training areas at
36 MCB Camp Pendleton and would be similar to existing training activities that currently occur throughout
37 MCB Camp Pendleton. In addition, no permanent military family housing or civilian housing areas are
38 located at or in the vicinity of the existing training areas. Before amphibious exercises at Green Beach or
39 within the State Lease Areas, the area would be cleared of all non-participating personnel, to include
40 children. Therefore, there would be no disproportionate impact to the health and safety of children from
41 implementation of the alternatives.

1.7 REGULATORY SETTING

42 CPF has prepared this EA based on the following environmental guidance documents:

- 43 • NEPA (42 USC §§ 4321-4370h)

- 1 • CEQ Regulations (Title 40 CFR 1500-1508)
- 2 • Navy Procedures for Implementing NEPA (32 CFR 775)
- 3 • OPNAVINST 5090.1D (January 10, 2014), *Environmental Readiness Program Manual*
- 4 • Marine Corps Order P5090.2A, Change 3, Chapter 12, dated August 26, 2013, *Environmental*
- 5 *Protection and Compliance Manual*

6 This EA has also been prepared to address the following regulatory requirements determined to be
 7 applicable to the Proposed Action:

- 8 • 16 USC §§ 1801-1891d as amended by the Magnuson-Stevens Fishery Conservation and
 9 Management Reauthorization Act of 2006 (Public Law 109-479)
- 10 • Clean Air Act (CAA), as amended, 42 USC §§ 7401-7671q
- 11 • Clean Water Act, 33 USC §§ 1251-1387
- 12 • Coastal Zone Management Act, 16 CFR §§ 1451-1466
- 13 • Endangered Species Act (ESA), 16 USC §§ 1531-1599
- 14 • EO 11990 – *Protection of Wetlands*
- 15 • EO 12898 – *Federal Actions to Address Environmental Justice in Minority Populations and Low-*
- 16 *income Populations*
- 17 • EO 13045 – *Protection of Children from Environmental Health Risks and Safety Risks*
- 18 • EO 13112 – *Invasive Species*
- 19 • EO 13186 – *Responsibilities of Federal Agencies to Protect Migratory Birds*
- 20 • Marine Mammal Protection Act, 16 USC §§ 1431-1445c-1
- 21 • Migratory Bird Treaty Act, 16 USC §§ 703-712
- 22 • National Historic Preservation Act, 16 USC §§ 470-470x-6
- 23 • Section 10 of the Rivers and Harbors Act, 33 USC § 403
- 24 • Sikes Improvement Act, 16 USC §§ 670-670f

25 Table 1-2 presents the anticipated agency permits and consultation potentially needed for the Proposed
 26 Action. Appendix A contains relevant agency correspondence.

Table 1-2. Anticipated Permits and Consultation for the Proposed Action

| Agency | Permit or Approval | Current Status |
|-----------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| San Diego RWQCB | Section 401 of the CWA | CPF will apply for a Section 401 permit after the decision document is signed |
| USACE | Section 404 of the CWA Section 10 of the Rivers and Harbors Act | CPF will apply for Section 404 permit and a Section 10 Letter of Permission after the decision document is signed |
| CCC | CCND | CPF will request CCC concurrence on a CCND |
| NMFS | Letter of Authorization under MMPA for marine mammal take | Completed; see NMFS (2013b) |
| | Section 7 of the ESA | Completed; see NMFS (2013c) |
| | EFH | CPF will initiate informal consultation with NMFS |
| USFWS | Section 7 of the ESA | Completed via programmatic avoidance measures identified in Biological Opinions from previous USFWS consultation (e.g., USFWS 1995, 2011a; and Marine Corps Installations West 2013) |
| California SHPO | Section 106 of the NHPA | CPF (via MCB Camp Pendleton Environmental Security Cultural Resources Management Branch) is consulting with the SHPO |

Notes: RWQCB = Regional Water Quality Control Board; CWA = Clean Water Act; CPF = Commander Pacific Fleet;
 CCC = California Coastal Commission; CCND = Coastal Consistency Negative Determination; NMFS = National Marine Fisheries Service; MMPA = Marine Mammal Protection Act; ESA = Endangered Species Act; EFH = Essential Fish Habitat;
 USFWS = U.S. Fish and Wildlife Service; ESA = Endangered Species Act; SHPO = State Historic Preservation Act;
 NHPA = National Historic Preservation Act.

1.8 ORGANIZATION OF THE EA

1 Chapter 1 of this EA describes the background and purpose of and need for the Proposed Action. Chapter
2 2 describes the Proposed Action and alternatives. Chapter 3 provides a description of the affected
3 environment and the environmental consequences with the implementation of each alternative for each
4 environmental resource area. Chapter 4 addresses the cumulative impacts of the Proposed Action and
5 other projects in the area. Chapter 5 provides other analyses required by NEPA. Chapter 6 presents the
6 agencies and persons contacted in the development of this EA. Chapter 7 presents the list of preparers and
7 their qualifications, and Chapter 8 presents the references. The appendices contain additional information
8 and technical analyses prepared in support of this EA.

1.9 PUBLIC AND AGENCY PARTICIPATION

9 To be provided following the Public Draft EA submittal.

1 **CHAPTER 2**

2 **PROPOSED ACTION AND ALTERNATIVES**

3 **2.1 INTRODUCTION**

4 The Proposed Action consists of an increase in amphibious training exercises at MCB Camp Pendleton.
5 Proposed amphibious training exercises would be similar to existing amphibious training, but at an
6 increased annual tempo and covering a larger area. In addition, new platforms and technologies would be
7 integrated into training under the Proposed Action. Implementation of the Proposed Action would provide
8 an opportunity for Navy, Marine Corps, and Army personnel the ability to gain and improve their
9 amphibious warfighting capabilities. Implementation of the Proposed Action would facilitate the timely
10 planning and execution of amphibious training exercises at MCB Camp Pendleton.

11 Amphibious training exercises specifically described in Section 2.2 currently occur at Red, Gold, and
12 Green beaches. This EA includes an analysis of expanding amphibious training exercises to include
13 conducting JLOTS, MPF, and FEX exercises at Green Beach (under Alternatives 1 and 2) and JLOTS,
14 MPF, FEX, and LSEs at White Beach (under Alternative 2 only). The proposed amphibious training
15 activities described in this document are consistent with previous training activities that have occurred on
16 MCB Camp Pendleton since the 1940s.

17 **2.2 DESCRIPTION OF EXISTING AMPHIBIOUS EXERCISE TRAINING AT MCB CAMP 18 PENDLETON**

19 **2.2.1 JLOTS AND MPF TRAINING**

20 For more than 70 years, various military units have conducted amphibious training exercises at MCB
21 Camp Pendleton. Since 2001, over 20 exercises of similar size and scope of JLOTS and MPF have
22 occurred at MCB Camp Pendleton. These exercises have occurred in five general geographic areas at
23 MCB Camp Pendleton: offshore, in the littoral zone (including the Del Mar Boat Basin), on the beaches,
24 in inland training areas, and in the air. Figure 2-1 presents a notional depiction of exercise features and
25 their approximate locations during an amphibious training exercise at MCB Camp Pendleton. Figure 2-2
26 presents a notional depiction of amphibious training exercise elements in and adjacent to the Del Mar
27 Boat Basin. Ship-to-shore training exercises occur in four phases: pre-deployment, deployment,
28 operational, and redeployment. The following sections provide descriptions of current training exercises.

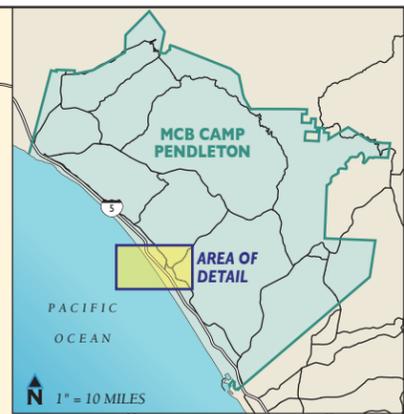
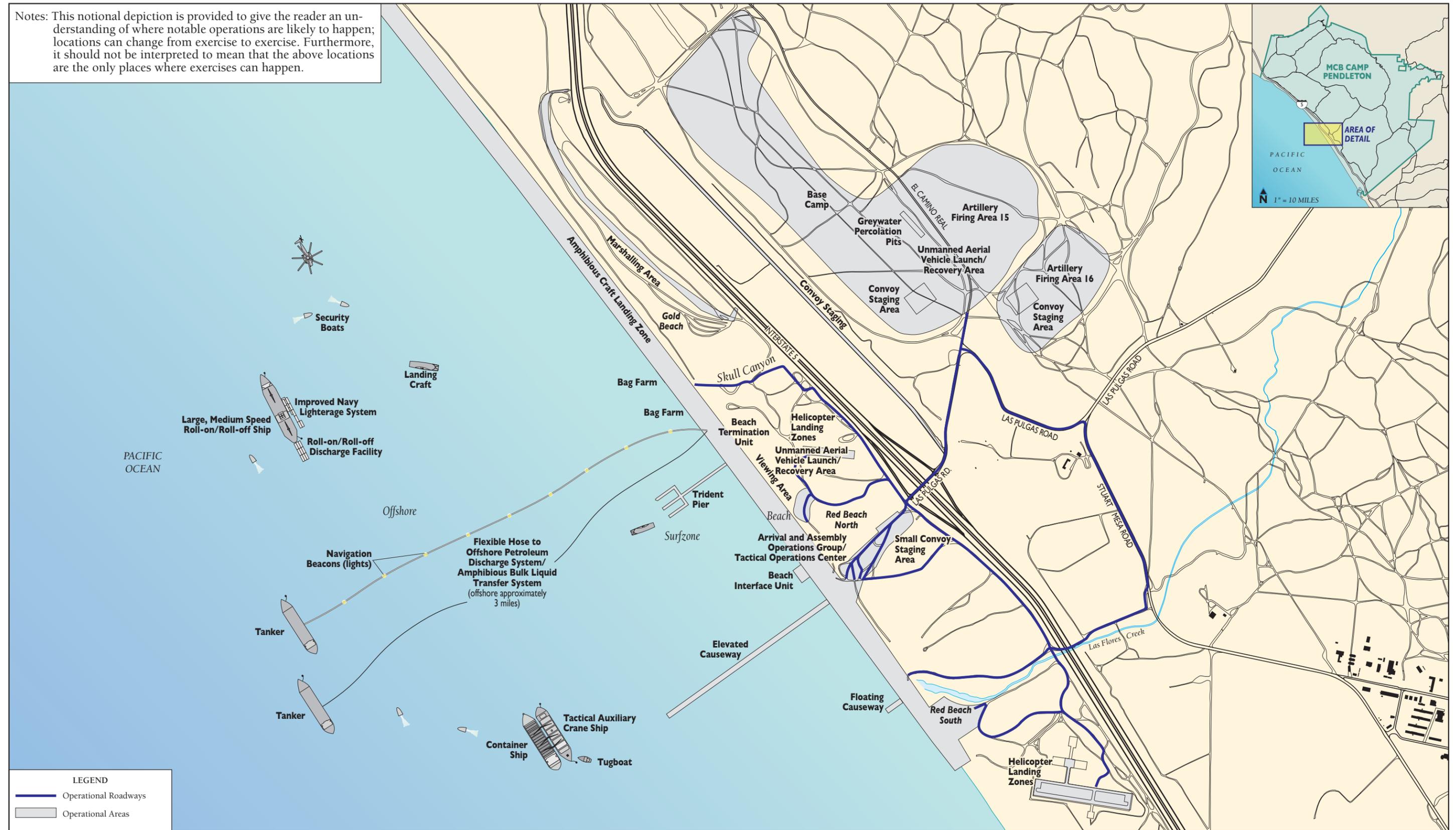
29 **2.2.1.1 Offshore Activities**

30 **Cargo Offload**

31 During JLOTS and MPF amphibious training exercises, MPF ships or chartered vessels containing cargo,
32 supplies, and equipment are anchored approximately 3 nautical miles (5.6 km) offshore of Red or Gold
33 beaches. The cargo consists of rolling stock, tracked vehicles, and Twenty-foot Equivalent Units. During
34 the exercise, personnel transfer cargo, supplies, and equipment to the beach using a variety of
35 systems/platforms, including the Improved Navy Lighterage System, Modular Causeway System,
36 Logistics Support Vessels, Landing Craft Utility boats, Landing Craft Mechanized boats, and Utility
37 Boats. For an average number of systems/platforms used during proposed amphibious training exercises,
38 refer to Table 2.2.

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Notes: This notional depiction is provided to give the reader an understanding of where notable operations are likely to happen; locations can change from exercise to exercise. Furthermore, it should not be interpreted to mean that the above locations are the only places where exercises can happen.



LEGEND

- Operational Roadways
- Operational Areas

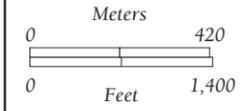


Figure 2-1
Notional Depiction of Major Amphibious Training Exercise Elements at MCB Camp Pendleton



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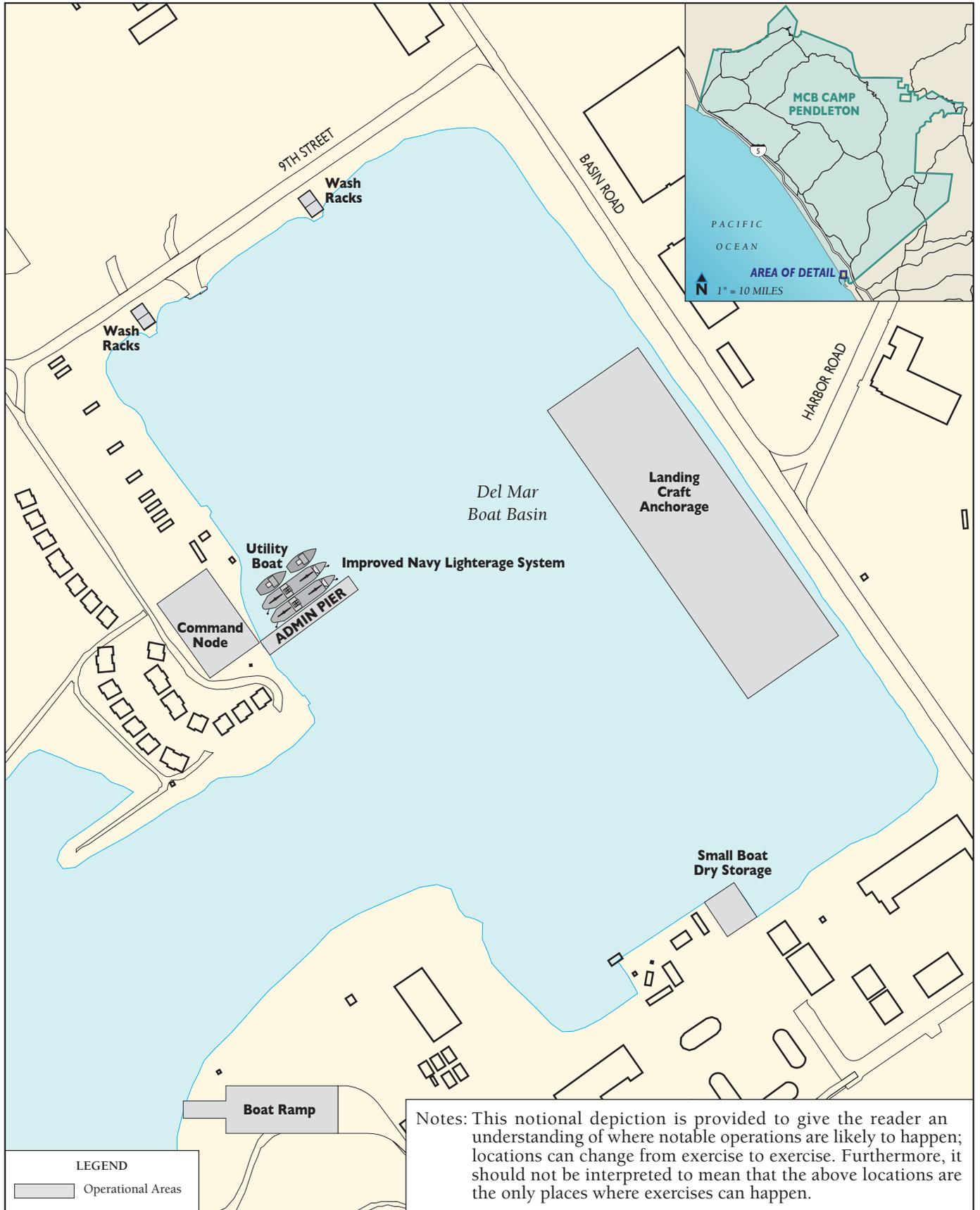


Figure 2-2
 Notional Depiction of Major Amphibious Training Exercise Elements at the Del Mar Boat Basin



1 The Improved Navy Lighterage System and Modular Causeway System consist of interchangeable
2 powered and non-powered floating platforms that are assembled offshore. Bulk and containerized cargo,
3 rolling stock, and tracked vehicles are transferred from a ship to the floating platforms via the ship's crane
4 or ramp. The Improved Navy Lighterage System provides MPF and JLOTS cargo throughput capacity in
5 weather conditions up to sea state 3 (the sea state is based on the Beaufort Scale; sea state 3 corresponds
6 to 1.6 feet (ft) to 4.1 ft [0.5 meters (m) to 1.2 m] waves, or "slight" conditions), whereas the Modular
7 Causeway System provides cargo throughput capacity in weather conditions up to sea state 2 (0.3 ft to 1.6
8 ft [0.1 m to 0.5 m] or "smooth" conditions).

9 Non-powered Improved Navy Lighterage Systems and Modular Causeway Systems are assembled into a
10 Roll-On/Roll-Off Discharge Facility that is towed into place by tugs. The Roll-On/Roll-Off Discharge
11 Facility is moored to the ship and used as a roadway between the ship (for example, a Large, Medium-
12 Speed Roll-On/Roll-Off Ship – a class of MPF ship) and an Improved Navy Lighterage System or
13 Modular Causeway System. The ramp of the ship is lowered onto the Roll-On/Roll-Off Discharge
14 Facility so that vehicles and equipment can be driven from the ship onto other Improved Navy Lighterage
15 System or Modular Causeway System rather than transferred via crane. The Navy's Improved Navy
16 Lighterage System Roll-On/Roll-Off Discharge Facility is attached to the ship's stern ramp and the
17 Army's Roll-On/Roll-Off Discharge Facility is tied alongside the port or starboard side of the ship. Figure
18 2-3 presents an image of a Large, Medium-Speed Roll-On/Roll-Off Ship with the Roll-On/Roll-Off
19 Discharge Facility off the stern of the ship. Figure 2-4 shows an image of a crane transferring cargo off
20 the starboard side of a Large, Medium-Speed Roll-On/Roll-Off Ship. Figure 2-5 presents all of these
21 activities along with an Improved Navy Lighterage System in the foreground.



Figure 2-3. Stern Roll-On/Roll-Off Discharge Facility and Large, Medium-Speed Roll-On/Roll-Off Ship



Figure 2-4. Starboard Roll-On/Roll-Off Discharge Facility and Large, Medium-speed Roll-On/Roll-Off Ship



Figure 2-5. Example of Proposed Offshore Vessel Activities

1 **Liquid Transfer**

2 The Offshore Petroleum Discharge System, Amphibious Bulk Liquid Transfer System, and Inland
 3 Petroleum Discharge System are used to simulate the transfer of petroleum products from ships to forces
 4 on the shore, and inland areas. The simulated transfer uses seawater; no petroleum products have ever
 5 been transferred during exercises. Approximately 100,000 to 200,000 gallons (378,500 to 757,000 liters)
 6 of seawater are used during any single exercise. The Offshore Petroleum Discharge System/Amphibious
 7 Bulk Liquid Transfer System process consists of pumping seawater from a tanker ship through a flexible
 8 conduit that runs along the ocean floor and then up to a beachside receptor known as a Beach Termination
 9 Unit or a Beach Interface Unit (Figure 2-6). Collectively, the aforementioned component features
 10 constitute an Offshore Bulk Fuel System.

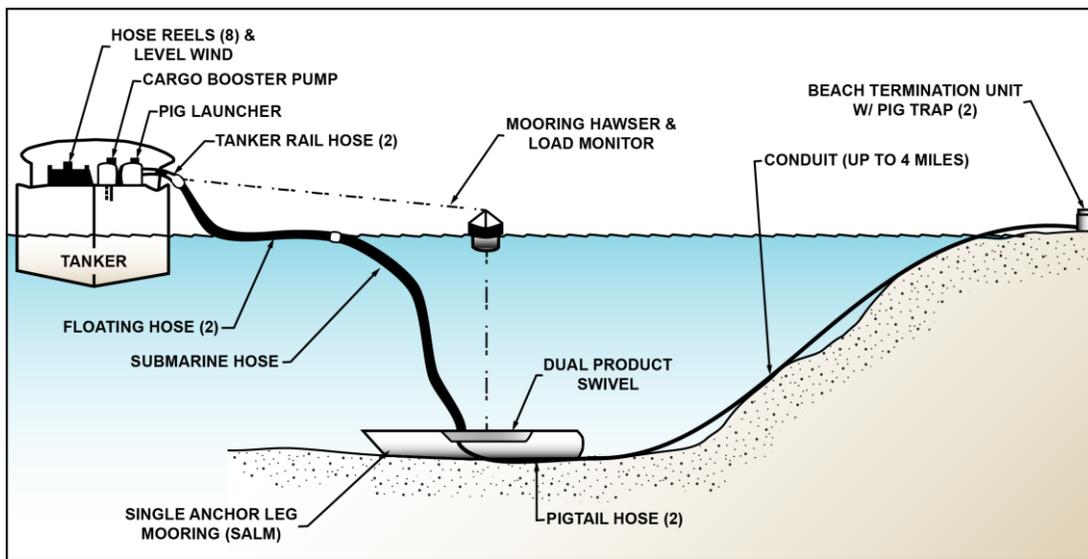


Figure 2-6. Notional Offshore Petroleum Discharge System

1 The Offshore Petroleum Discharge System has a flexible hose system that can extend from the beach
2 inland for up to 4 miles (6.4 km), although the Offshore Petroleum Discharge System typically only
3 extends approximately 1-2 miles (2-3 km) inland during training events. The system includes a Single
4 Anchor Leg Mooring that is anchored on the ocean floor and used as a mooring buoy for the flexible hose
5 system. The Offshore Petroleum Discharge System hose is anchored to the sea floor at various locations
6 along the hose. The Offshore Petroleum Discharge System hose extends onshore to a Beach Termination
7 Unit that connects with the Inland Petroleum Discharge System that pumps the liquid further inland. The
8 Inland Petroleum Discharge System hose can extend less than 2 miles (3.2 km) or up to 5 miles (8 km) to
9 a simulated petroleum bag farm.

10 The Amphibious Bulk Liquid Transfer System is a floating hose system that is deployed at up to 1.9 miles
11 (3 km) from the Beach Interface Unit to the tanker ship. The Amphibious Bulk Liquid Transfer System
12 has a floating hose that is marked with affixed lights. The water used in the Offshore Petroleum Discharge
13 System or Amphibious Bulk Liquid Transfer System is gradually discharged into the Pacific Ocean away
14 from the shoreline at the completion of the exercise.

15 Tactical Water Purification Systems, formerly known as “Reverse Osmosis Water Purification Units,” are
16 also used during training, although infrequently. Tactical Water Purification System desalinate and purify
17 seawater to create potable water. The Tactical Water Purification System process uses reverse osmosis
18 and chlorination to treat seawater, which is usually extracted from the ocean offshore of Red Beach. A
19 Tactical Water Purification System produces approximately 20,000 gallons (75,700 liters) of potable
20 water per average use. At the end of the Tactical Water Purification System evolution, a percolation pit is
21 excavated in the sand above the high tide line of sufficient size to contain all product water and brine
22 solution. The product water and brine solution are then discharged into the pit to remix and percolate into
23 the underlying sand. The pit is then filled with the excavated sand.

24 **Landing Craft Air Cushion**

25 The Landing Craft Air Cushion is a high-speed, over-the-beach fully amphibious landing craft, capable of
26 carrying a 60-75 ton (54-68 metric ton) payload. Landing Craft Air Cushions are used to transport the
27 weapons systems, equipment, cargo, and personnel of the assault elements of a Marine Air Ground Task
28 Force from ship to shore and across the beach. The Landing Craft Air Cushion can carry heavy payloads,
29 such as an M-1 tank, at high speeds. The Landing Craft Air Cushion’s payload capability and speed
30 combine to greatly increase the ability of the Marine Ground Element to reach the shore. Air cushion
31 technology allows this vehicle to reach more than 70 percent of the world's coastline, while only about 15
32 percent of that coastline is accessible by conventional landing craft (Navy 2010). Figure 2-7 depicts an
33 Landing Craft Air Cushion coming ashore at MCB Camp Pendleton.



**Figure 2-7. Landing Craft Air Cushion Coming Ashore
at MCB Camp Pendleton**

1 **2.2.1.2 Littoral Activities**

2 **Cargo Offload**

3 Personnel accomplish cargo offload using several methods, including piers and beach landings. The
4 Elevated Causeway is a temporary pier that extends from the beach into the water through the surf zone to
5 a distance of approximately 3,000 ft (914 m) offshore. The Elevated Causeway allows vessels with deeper
6 draft (that are unable to land on the beach) to dock and offload their cargo/equipment safely outside the
7 surf zone. Once all of the Elevated Causeway components are assembled onshore (within an
8 approximately 4-acre [1.6-ha] area), two bulldozers grade a ramp in the beach to facilitate construction
9 from the beach seaward. The area graded is approximately 100-ft wide by 200-ft long (30-m by 61-m)
10 and the ramp is filled in to match the existing beach contour after ELCAS removal. Using a diesel impact
11 hammer, personnel drive approximately one hundred, 24-inch (60-centimeter) diameter steel piles into the
12 sand below the water before hoisting the causeway platform pieces into place where they are installed
13 using hydraulic jacks. An Elevated Causeway is typically constructed in 10 days.

14 The temporary pier extends from shore to a depth of 20 ft (6 m) Mean Lower Low Water; which at Red
15 Beach typically corresponds to distance of approximately 1,200 ft (366 m) (as a point of reference, 11
16 days were needed to assemble a 1,020-ft [311-m] long temporary pier for the 2008 JLOTS). Once
17 constructed, offloading operations are similar to those of a conventional pier. Two cranes and a vehicle
18 turnstile (at the end of the Elevated Causeway) are used for container offload. The temporary Elevated
19 Causeway pier and all component pieces, including associated piles, are removed at the conclusion of
20 training, a process that takes approximately two weeks to complete. Personnel use a vibratory extractor to
21 remove all of the piles. Figure 2-8 presents images of an Elevated Causeway. On average, an Elevated
22 Causeway is either being assembled, used, or removed over a period of approximately 30 continuous
23 days.

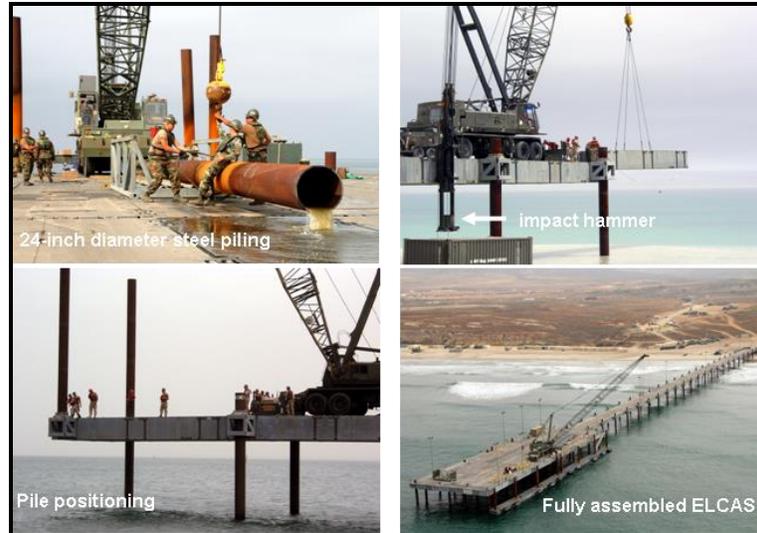


Figure 2-8. Construction of Elevated Causeway Elements

1 The TRIDENT Pier is an assembled floating platform typically 60-90 ft (18-27 m) wide that extends from
 2 the beach through the surf zone out to distances of approximately 1,200 ft (366 m). While the TRIDENT
 3 Pier is typically held in place with anchors to the beach, the TRIDENT Pier can also be positioned via
 4 anchors on the ocean floor. Construction of the pier involves digging a pit in the wet sand (generally 25-ft
 5 [8-m] wide by 30-ft [9-m] long by 8-ft [2-m] deep). Multiple craft with deeper draft can be moored to any
 6 of the up to three pier heads on a TRIDENT Pier to offload their cargo (refer to Figure 2-1). Rolling stock
 7 constitutes the bulk of the equipment offloaded via the TRIDENT Pier.

8 Landing Craft Utility boats, Logistics Support Vessels, and Landing Craft Mechanized boats move rolling
 9 stock and containerized cargo to shore. Cargo and vehicles are transferred from the ship onto the Landing
 10 Craft Utility boats and Logistics Support Vessels utilizing the Roll-On/Roll-Off Discharge Facility or via
 11 the ship's crane, and the vessels motor to the shore, lower their ramps, and the vehicles and cargo are
 12 driven onto the beach (Figure 2-9).



Figure 2-9. Typical Vehicle Offload from Landing Craft Utility Boat

1 **Safe Harbor**

2 Amphibious training exercises use the Del Mar Boat Basin as a safe harbor during inclement weather, as
3 well as an anchorage location for the Landing Craft Utility boats at all times. In addition, the area is used
4 to swap ship crews, perform minor maintenance, and refuel lighterage craft. An ADMIN Pier or other
5 floating causeway (approximately 270-ft [82-m] long) is typically anchored onto the beach in the Del Mar
6 Boat Basin and/or in the water to serve as a mooring platform for the vessels. Some parts of the
7 TRIDENT Pier can be assembled in the Del Mar Boat Basin and be towed offshore before the complete
8 structure is assembled on or offshore of the beach. On average, 55 personnel are present at the Del Mar
9 Boat Basin during an exercise and operations are active on a 24-hour basis. A small command node in the
10 form of a few tents and antennas is established near the ramp to facilitate communication with other
11 locations/units. Refer to Figure 2-2 for a notional depiction of these and other supporting elements in the
12 Del Mar Boat Basin.

13 **Force Protection/Security**

14 Amphibious training exercises also provide training for landward and seaward Force Protection and
15 security. Seaward security is performed using small, 34-ft (10-m) long security boats that patrol around
16 supply ships to protect them from maritime threats. The boats are towed on a trailer via truck to the Del
17 Mar Boat Basin where they are placed into the water. Figure 2-10 depicts a security boat on patrol behind
18 a Roll-On/Roll-Off Discharge Facility .



Figure 2-10. Force Protection Boat Patrolling behind Stern Roll-On/Roll-Off Discharge Facility

1 **2.2.1.3 Beach Activities**

2 **Cargo Offload**

3 Traffic control personnel direct all activities on the beach to ensure the efficient and safe offload of
4 personnel and materiel. Lighter Amphibious Resupply Cargos, bulldozers, and tactical vehicles are
5 stationed on the beach during offload operations to facilitate 24-hour beach offloading activities. Lighter
6 Amphibious Resupply Cargos are amphibious vehicles that can operate both on the beach and in the near
7 shore to assist with the shuttling of supplies and personnel to and from shore. Bulldozers are often used to
8 assist vessels that are stuck in the sand (by pushing them back into the water). Tactical vehicles are
9 typically used for personnel and supply transport between the beach and inland areas.

10 Causeway platforms containing the cargo are motored through the surf onto the beach. Bulldozers
11 excavate temporary notches in the beach to make an anchor point for the platform, which is beached using
12 a barge ferry. Once the materiel are assembled onshore (within an approximate 4-acre [1.6-ha] area), two
13 bulldozers grade the beach (i.e. level the sand) into the surf zone to create an excavated area that is
14 approximately 150 ft by 150 ft (45 m by 45 m) that serves as the beachhead for the platform or pier.
15 Vehicles and cargo are then driven off the floating causeway onto the beach (Figure 2-11). Any beach
16 areas excavated during the exercise are filled in at the conclusion of the exercise. To facilitate the
17 movement of vehicles up and along the beach, mobility matting is used from the high-water mark up and
18 throughout the beach area. Mobility matting is a lightweight, durable, and rapidly deployable polyester
19 matting/soil stabilization system that enables wheeled military traffic to traverse sand and soft soil.



Figure 2-11. Typical Floating Causeway Offload Operations

1 During offload operations, there is a small potential that the Improved Navy Lighterage System, Modular
2 Causeway System, Landing Craft Utility boats, or Logistics Support Vessels might need assistance if
3 wave action shifts the alignment of the watercraft such that a watercraft becomes parallel with the shore.
4 To respond to these rare occurrences, Improved Navy Lighterage System warping tugs, Army Side
5 Loadable Warping Tugs, and Army and/or commercial tugs are ready to pull the craft back to sea.

6 Amphibious Assault Vehicles, which are tracked vehicles similar to tanks, may also move from the ship
7 to shore during MPF and JLOTS exercises. The Amphibious Assault Vehicles drive off the ship ramp into
8 the water, float, motor to the surf zone, and drive up onto the beach and into inland areas. The
9 Amphibious Assault Vehicles typically have crew-served M2 .50 caliber machine guns or MK 19 grenade
10 launchers mounted for use in training exercises on established inland range areas on MCB Camp
11 Pendleton. No live-fire activity occurs in the ocean or on the beach. Live-fire only occurs within
12 designated inland live-fire ranges at MCB Camp Pendleton.

13 **Onshore Arrival and Assembly**

14 Many vehicles and equipment are partly unassembled for tight storage on the ship and have to be
15 reassembled when they are delivered to the shore so that they can be driven/transferred further inland.
16 This “vehicle marshalling” activity typically occurs along El Camino Real and in the Skull Beach/Canyon
17 area (refer to Figure 2-1). After equipment, materiel, and cargo are offloaded, they are staged, typically
18 along the beach and/or the bluffs above the beach. From the beach or other marshalling area, the
19 equipment and cargo are transferred inland to an area where personnel mount armor, communications
20 gear, and weapons. Equipment and cargo are then moved to the Base Camp area (as described in Section
21 2.2.1.5) for distribution to personnel, or further inland via existing access roads to conduct routine
22 training on existing ranges.

23 Vehicles are driven to their destination and cargo is transferred via forklift onto trucks. As many as 40
24 large cargo transport vehicles are used to transfer the equipment to any one of several destinations
25 including but not limited to the beachside pier or Del Mar Boat Basin for return transfer to ship, to inland
26 training areas, to rail cars, or over roads to other regional DoD installations. Transportation from shore to
27 inland areas occurs via any of the established roads on the existing access road network, depending on the
28 type of vehicles and their destination area and mission objectives (e.g., tracked vehicles would use dirt
29 access roads, whereas wheeled vehicles would typically use asphalt access roads).

30 **Force Protection/Security**

31 As part of the exercises, up to two trailer sensor platforms and a single Maritime Operations Center are
32 established on either end of the beach operations up on a bluff. The trailer sensor platform is a radar
33 system that searches for movement on the water’s surface. The Maritime Operations Center is a tent with
34 consoles to support the trailer sensor platforms and facilitate integrated communication with maritime
35 security operations. In addition, small tent camps (for example, a Navy and Army Joint Operations
36 Center, Tactical Operations Center, and/or communications, and security squadron support tents) are
37 often located at Red Beach (on Red Beach North and/or Red Beach South bluffs). Figure 2-12 presents an
38 image of a typical Tactical Operations Center adjacent to an antenna farm. The area also includes portable
39 toilets and generators. A long-range acoustical device (which is similar to a loudspeaker system and can
40 produce loud continuous noise) is used on rare occasions around the perimeter of the Base Camp to
41 simulate efforts to deter unauthorized personnel from entering the area.



Figure 2-12. Typical Tactical Operations Center and Adjacent Antenna Farm

1 **2.2.1.4 Upland Activities**

2 **Railheads**

3 Existing MCB Camp Pendleton railheads are used during JLOTS and MPF exercises. Two locations are
4 typically used: one by the South Gate by the Oceanside Harbor (Oceanside Railroad Yard) and the other
5 by the main entrance across from the commissary (Fallbrook Junction). The railheads are used for the
6 loading and shipment of rolling stock, equipment, and containerized cargo. Typically, the Fallbrook
7 Junction Railhead is used for rolling stock, and the Oceanside Railroad Yard Railhead is used for
8 containerized cargo. Vehicles drive off the railhead and to their destination, and non-rolling equipment
9 and cargo are transferred onto a flatbed truck or a Medium Tactical Vehicle Replacement via a Rough
10 Terrain Cargo Handling forklift or other forklifts and transported to their destination.

11 **Tent Camps**

12 Personnel are temporarily billeted in a tent camp located on Artillery Firing Area 15 and/or Artillery
13 Firing Area 16 (refer to Figure 2-1). This area, also referred to as the “Life Support Area,” serves as the
14 Base Camp and can cover up to 50 acres (20 ha). The Base Camp consists of personnel billeting tents;
15 command, communications and operations tents; maintenance facilities; medical tents; portable galley
16 facilities; portable latrine and shower facilities; and laundry facilities (Figure 2-13). The Base Camp also
17 contains morale, welfare, and recreation facilities that may include a gym, movie tent, barber tent, and a
18 chapel. The tents have an average dimension of 18-ft wide by 24-ft long (7-m wide by 5-m long).

19 Site preparation activities at the Base Camp site include mowing grass, performing minor grading where
20 necessary, and spraying for insect control. Communication and electrical cables may be laid through the
21 encampment, which requires minimal trenching (i.e., up to several inches). The cables are removed at the
22 end of each exercise. A watering truck is often used to minimize dust from grading activities and
23 vehicular travel. All power is self-generated by the Base Camp. Up to 20 generators of various size run 24

1 hours per day to support the onsite electricity demand. In addition, light units (with additional integrated
2 generators) are used to illuminate the area during hours of darkness. Razor wire line barriers and/or
3 yellow caution tape is used to delineate portions of the Base Camp and other encampments. Barrier wire
4 is also used at vehicle checkpoints. Most vehicles are parked in Artillery Firing Area 15 and/or Artillery
5 Firing Area 16 when not in use.

6 Portable latrine facilities are located in the area of the personnel tents (on Figure 2-13 the portable latrine
7 facilities are the small, blue rectangular structures); no leach fields are constructed. A contractor regularly
8 services the portable latrine facilities. Some of the graywater that is generated from the shower and
9 clothes washing facilities is collected, stored, and disposed of via percolation pits and/or commercial
10 tanker. After being excavated and used to collect shower and clothes washing graywater, percolation pits
11 are then refilled and leveled at the end of the exercise. The construction of these pits involves digging up
12 to two shallow pits (generally 70-ft [21-m] wide by 100-ft [30-m] long by 8-ft [2-m] deep) using
13 bulldozers. Figure 2-14 depicts two percolation pits constructed during Pacific Horizon 11. Solid waste is
14 collected in dumpsters and disposal is accomplished via contractor pickup using the existing MCB Camp
15 Pendleton solid waste disposal contract.



Figure 2-13. Previous Base Camp at Artillery Firing Area 15 with Red Beach in Background



Figure 2-14. Percolation Pits

1 **Force Protection/Security Training**

2 Land force security includes the construction and/or placement of temporary security barriers and the
3 protection of personnel and supplies at each of the operational sites used during exercises. Land training
4 consists of convoys on El Camino Real, and/or at the Tango or Oscar Ranges (as dictated and approved
5 by the MCB Camp Pendleton Range Operations Division). Foot and vehicle patrols also occur around the
6 perimeter of the Base Camp and other training areas.

7 **Vehicle Maintenance and Refueling**

8 Vehicle and equipment maintenance or repair is typically conducted at the Base Camp; however,
9 maintenance can occur at other locations if the vehicle or equipment cannot be easily transported to the
10 Base Camp for maintenance/repair (for example, at the Del Mar Boat Basin). Hazardous materials used in
11 vehicle maintenance include antifreeze, brake fluid, solvent cleaning compound, grease, hydraulic fluid,
12 lubricating oil, detergent, isopropyl alcohol, corrosion preventative compound, penetrating oil, sealing
13 compound, and silicone compound. All hazardous materials and wastes are managed in accordance with
14 applicable USMC, federal, and state regulations. Maintenance activities do not occur near the percolation
15 pits. The distance as well as the implementation of spill minimization and containment measures all but
16 eliminates the potential for hazardous materials or wastes to reach the percolation pits.

17 As the potential exists for vehicles being transported on to the beach to get wet at the axle level or higher,
18 post-operation salt-water checks for vehicles typically occur at vehicle marshalling areas and or railhead
19 transport areas. Any equipment or cargo in need of a wash down goes through the wash rack at the Del
20 Mar Boat Basin. A wash rack is a covered facility where vehicles drive in and are “washed down” with
21 water and the runoff is collected and treated before disposal.

22 The refueling of rolling stock and generators is typically conducted by fuel trucks. The fuel trucks drive to
23 the generators and refuel the generators. All maintenance and refueling activities are conducted in
24 accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013a) prepared in support
25 of amphibious exercise training exercises. Vehicles are refueled in established and designated refueling
26 areas at MCB Camp Pendleton; vehicles are not refueled on the beach. Refueling and maintenance of
27 equipment occurs at least 100 ft (30 m) away from surface water drainages.

28 **Cargo Reload**

29 Typically, cargo is reloaded onto ships at the conclusion of the exercise. This usually occurs in the Del
30 Mar Boat Basin using the same systems/platforms used to bring the materiel to shore, back out to the

1 larger craft outside of the Del Mar Boat Basin, but can also occur on the beach in the opposite manner
 2 with which the cargo came ashore, using the same equipment and procedures, albeit in reverse.

3 **2.2.1.5 Air Activities**

4 Cargo, equipment, and personnel can be transferred from ship to shore via CH-46s, CH-53s, and MV-22s.
 5 The MV-22 is replacing the current USMC assault helicopters in the medium lift category (CH-46 and
 6 CH-53), contributing to the dominant maneuver of the Marine landing force, as well as supporting
 7 focused logistics in the days following commencement of an amphibious operation. MV-22s are able to
 8 operate and land just like any other legacy aircraft that operate at MCB Camp Pendleton (Marine Corps
 9 Installations West 2013). Helicopters and rotary wing aircraft land at the existing designated landing areas
 10 (refer to Figure 2-1), which are affixed with interlocking aluminum matting. Helicopters and rotary wing
 11 aircraft can also be used for air medical evacuation as needed. Existing Restricted Airspace at MCB
 12 Camp Pendleton is depicted on Figure 2-19 in Section 2.4.1.

13 Unmanned aerial vehicles (UAVs) may be used as part of amphibious exercises and perform similar
 14 missions as legacy rotary wing and fixed wing aircraft participating in these types of exercises. UAVs are
 15 typically launched and recovered from the bluffs adjacent to Red Beach and old Highway 101, adjacent to
 16 Artillery Firing Area 15. UAV operations are conducted within existing Restricted Airspace and in
 17 accordance with FAA and USMC requirements pertaining to the use of UAVs. Flight times over public
 18 areas (i.e., Interstate 5) are minimized. Refer to Figure 2-21 for a depiction of the notional UAV launch
 19 and recovery locations.

20 **2.2.1.6 Exercise Duration**

21 Table 2-1 presents the main components and associated durations of a typical JLOTS exercise. Pre-
 22 deployment activities generally consist of an advance party of approximately 200 personnel to establish
 23 the Base Camp and the Joint Operations Center. During this period, beach and hydrographic surveys are
 24 conducted to map existing oceanographic conditions. Before deployment and the start of the exercise, all
 25 personnel receive a pre-exercise environmental brief. In addition, the exercise proponent releases a Notice
 26 to Mariners via the U.S. Coast Guard (District 11) alerting local marine users of the training exercises and
 27 the duration and location of the exercises.

Table 2-1. Example Training Activity Duration for a JLOTS Exercise at MCB Camp Pendleton

| Activity | Average Duration (days)* |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Initial equipment offload at Artillery Firing Area 15/16 and ELCAS equipment arrival at the Del Mar Boat Basin | 3 |
| Construction of Base Camp and Red Beach command and communications encampment | 11 |
| Ligherage operations, LSV and LCU operations training, force protection and security training | 49 |
| Construction, operation, and removal of ELCAS and floating piers | 32 |
| Installation, operation, and removal of OPDS and IPDS systems | 15 |
| Teardown of the Base Camp and Red Beach command and communications encampment | 6 |
| Final truck re-load of equipment at Artillery Firing Area 15/16 and ELCAS equipment departure from the Del Mar Boat Basin | 2 |

Notes: *The duration could shift if there are operational delays or challenges getting the necessary assets for training. Activities may overlap in time. The tempo for amphibious training exercises would be 24-hour a day “phased” operations. Generally, the onward movement timeline is constrained; therefore, operations may be conducted 24 hours a day to maximize the throughput of cargo above the high water mark and moved inland to an assembly area. During the operations period, most operations (80%) are conducted during daylight hours with ELCAS construction conducted on a 24-hour basis.

ELCAS = Elevated Causeway; LSV = Logistics Support Vessel; LCU = Landing Craft Utility; OPDS = Offshore Petroleum Discharge System; IPDS = Inland Petroleum Discharge System.

1 The main body of the exercise arrives after the advance party to establish the Base Camp and support
2 facilities. Using a STRATEGIC Sealift or via line haul, the majority of the equipment for the deployment
3 of the advance party and main body is moved from the units' homeport or garrison. Some equipment is
4 also transported via Improved Navy Lighterage System and Landing Craft Utility boats from the units'
5 homeport (e.g., Naval Base Coronado) to the MCB Camp Pendleton operating areas.

6 **2.2.2 FEX TRAINING**

7 FEX training at MCB Camp Pendleton include some but not all components of a full JLOTS and/or MPF
8 exercise. In a typical year, approximately six to eight FEXs occur at MCB Camp Pendleton on Red and/or
9 Gold beaches. These exercises consist of Unit Level Training and Readiness Assessments, Final
10 Evaluation Problems, or Integrated Exercises and can occur as part of a larger exercise (i.e., a JLOTS or
11 MPF).

12 Each exercise can involve a wide range of personnel (from as few as 30 to as many as 800) and generally
13 last for 7-14 days. Training evolutions typically include small boat operations (offshore), communication
14 tents on the beach, convoy operations, campsite setup/security, entry control point operations, and
15 command and control facilities/operations, as generally described for JLOTS and MPF exercises, though
16 at a much smaller scale.

17 **2.2.3 LARGE-SCALE EXERCISES**

18 LSEs at MCB Camp Pendleton analyzed in this EA are best exemplified by "Dawn Blitz," a large-scale,
19 multi-national training event last conducted from June 15 – 30, 2013. As described in the EA prepared for
20 Dawn Blitz 2013 (USMC 2013a), this exercise consisted of amphibious training involving Navy,
21 Japanese Self-Defense Force ships, Marine Corps Amphibious Assault Vehicles, Landing Craft Air
22 Cushions, Landing Craft Utility boats, and Japanese Self-Defense Force Combat Rubber Raiding Craft,
23 rotary wing aircraft, and other landing craft supporting ship-to-shore maneuvers. On MCB Camp
24 Pendleton, the exercise was conducted on Red, Gold, and Green beaches, multiple maneuver corridors
25 (within the State Lease Area), and within the San Mateo Campground.

26 The entire San Mateo Campground was closed to public use during the entire 15-day exercise period;
27 before Dawn Blitz 2013, the last military-related temporary closure of the San Mateo Campground was in
28 2000. In addition, as part of Dawn Blitz 2013, a small unit training exercise took place concurrently at the
29 Silver Strand Training Center. Training activities and exercises at the Silver Strand Training Complex are
30 addressed in the Silver Strand Training Complex Final Environmental Impact Statement (EIS) (CPF
31 2011).

32 **2.2.4 SUMMARY OF EXISTING AMPHIBIOUS TRAINING EXERCISES AT MCB CAMP PENDLETON**

33 As previously described, several vessels, systems, and equipment types may be used during amphibious
34 training exercises. Table 2-2 presents a summary of the equipment, personnel, and durations that are
35 typically used during amphibious training exercises at MCB Camp Pendleton.

Table 2-2. Summary of Average Component Features of Amphibious Training Exercises

| Component Feature | Average Number for Each Logistic Exercise | | | |
|------------------------------------|-------------------------------------------|------------------|--------------------|------------------|
| | JLOTS | MPF | LSE | FEX |
| Offshore Activities | | | | |
| MPF Ships (or equivalent) | 3 | 1 | 1 | - |
| Utility Boats | 3 | 2 | 2 | 2 |
| LCU | 4 | 2 | 2 | 2 |
| INLS Causeway Ferries | 4 | 4 | 3 | 4 |
| INLS Warping Tugs | 4 | 4 | 3 | 4 |
| MCS | 1 | - | - | - |
| LSV | 1 | - | - | - |
| LCM | 4 | 2 | 2 | 2 |
| RRDF | 2 | 1 | - | - |
| Tugs | 2 | - | - | - |
| OPDS | 1 | 1 | - | - |
| ABLTS | 1 | 1 | 1 | 1 |
| IPDS | 1 | - | - | - |
| Tactical Craft | 3 | 1 | 2 | - |
| LCAC | - | - | 2 | 2 |
| Littoral Activities | | | | |
| ELCAS | 1 | - | - | - |
| TRIDENT Pier | 1 | - | - | - |
| Floating Causeway | 1 | - | - | - |
| Security Boats | 12 | 3 | 2 | - |
| Side Loadable Warping Tug | 6 | - | - | - |
| Beach Activities | | | | |
| Lighter Amphibious Resupply Cargos | 4 | 2 | 2 | 2 |
| Bulldozers | 5 | 3 | 1 | 1 |
| Tactical Vehicles | 10 | 5 | 2 | 2 |
| AAVs | 10 | 10 | 18 | - |
| Combat Rubber Raiding Craft | - | - | 12 | - |
| Large Cargo Transport Vehicles | 40 | 20 | 5 | - |
| Trailer sensor platforms | 2 | 1 | 1 | - |
| Maritime Operations Center | 1 | 1 | 1 | - |
| Joint Operations Center | 1 | - | 1 | - |
| Support Tents | 8 | 6 | 4 | 4 |
| UAV | 11 | - | 5 | 5 |
| Upland Activities | | | | |
| Base Camp Tents (all types) | 315 | 75 | 40 | 40 |
| Tactical Water Purification System | 6 | 3 | 3 | 1 |
| Light Units | 17 | 6 | 6 | 6 |
| Miscellaneous Trucks | 55 | 21 | 20 | 15 |
| Miscellaneous Vehicles | 119 | 47 | 40 | 25 |
| Generators | 36 | 15 | 15 | 10 |
| Vans/Buses | 16 | 10 | 10 | 5 |
| Portable Toilets (all areas) | 35 | 13 | 10 | 15 |
| Air Activities | | | | |
| CH-46/MV-22 ¹ | 2 | 1 | 2 | - |
| CH-53/MV-22 ¹ | 2 | 1 | 2 | - |
| Personnel | 2,000-3,500 | 600-1,500 | 1,000-3,000 | 30-800 |
| Duration | 90 days | 30 days | 10-21 days | 7-14 days |

Notes: ¹ The MV-22 is replacing the current USMC assault helicopters in the medium lift category (CH-46 and CH-53).

LCU = Landing Craft Utility; INLS = Improved Navy Lighterage System; MCS = Modular Causeway System; LSV = Logistics Support Vessel; LCM = Landing Craft Mechanized; RRDF = Roll-on/Roll-off Discharge Facility; OPDS = Offshore Petroleum Discharge System; ABLTS = Amphibious Bulk Liquid Transfer System; IPDS = Inland Petroleum Discharge System; LCAC = Landing Craft Air Cushion; ELCAS = Elevated Causeway; AAV = Amphibious Assault Vehicle; UAV = Unmanned Aerial Vehicle.

2.3 ALTERNATIVES DEVELOPMENT

1 CPF used the following process to identify alternatives for analysis in this EA. First, the project team
2 identified screening criteria that captured the range of elements each alternative must have to meet the
3 purpose of and need for the Proposed Action. The project team then identified possible reasonable
4 alternatives that met as many of the screening criteria as possible and then compared the alternatives
5 based on their ability to fulfill all of the screening criteria. The outcome of this analysis was the
6 identification of those alternatives considered but eliminated from analysis (as they failed to meet all of
7 the screening criteria) and those alternatives that met the screening criteria. This process ensured that this
8 EA identified those alternatives that are considered technically practical or feasible, and would meet the
9 purpose of and need for the Proposed Action.

10 The following sections present the screening criteria, the possible alternatives considered, a comparison
11 of the screening criteria and possible alternatives, the alternatives considered but eliminated, and those
12 alternatives carried forward for analysis in this EA.

13 2.3.1 SCREENING CRITERIA

14 CPF developed the following 17 screening criteria specifically for this EA to assess whether a possible
15 alternative would meet the purpose of and need for the Proposed Action. For an alternative to be
16 considered viable, a potential alternative would need to satisfy each of the 17 screening criteria. These
17 comprehensive screening criteria were developed to reflect the needs of on-going and anticipated future
18 amphibious training in the west coast. If a potential alternative would fail to meet any of the screening
19 criteria, then training requirements would not be achieved, and therefore the alternative was not carried
20 forward for analysis in this EA.

- 21 1. Selected area must be on the west coast of the U.S.
- 22 2. Selected area must provide co-location with commands, equipment, facilities, and
23 infrastructure that support existing and future training and personnel tempo requirements as
24 described in Sections 2.2 and 2.4.1.2.
- 25 3. Selected area must have sufficient available and suitable training space to simultaneously
26 accommodate the training needs of all of the operational users described in Section 2.2 so that
27 they can achieve training tempo requirements based on deployment schedules.
- 28 4. Selected location must have available and suitable training space and infrastructure to host
29 and support all amphibious exercise types.
- 30 5. Selected area must allow for the anchorage of as many as 15 vessels offshore and the
31 placement of an Elevated Causeway and TRIDENT Pier system on a bare beach environment
32 to facilitate the transfer of vehicles, personnel, and cargo from ship to shore.
- 33 6. Selected area must allow for a TRIDENT Pier system to be constructed offshore or at an
34 offsite staging area with adequate shore facilities and stable environmental conditions, and be
35 floated to the designated beaching area.
- 36 7. Selected area must facilitate the use of temporary Offshore Petroleum Discharge System /
37 Inland Petroleum Discharge System and the placement of a Single Anchor Leg Mooring on
38 the ocean floor to secure a length of flexible conduit (for the pumping of saltwater) between a
39 ship and the shore.
- 40 8. Selected area must contain at least one safe haven/harbor area for lighterage shelter and
41 materiel onload/offload in the event of unfavorable sea conditions at the shore location.
- 42 9. Selected area must provide for at least 5 acres (2 ha) on the beach for the staging of offloaded
43 equipment and materiel.

- 1 10. Selected area must provide for at least 50 acres (20 ha) inland for the establishment of a
2 temporary Base Camp and vehicle marshalling and staging areas with access to shoreline
3 onload/offload facilities and major interstate transportation routes (highway and rail).
4 11. Selected area must allow for watercraft operations in the surf zone.
5 12. Selected area must allow for the onward movement of personnel and materiel to other
6 installations/locations.
7 13. Selected area must have a beach that has sufficient width and length and the right gradient to
8 facilitate beach operations (at least 1,000-ft [305-m] wide).
9 14. Selected area must have bathymetry⁴ with a slope ranging from 1:50 to 1:200.
10 15. Selected area must support emerging lighterage vessels.
11 16. Selected area must be compatible with adjacent land uses.
12 17. Selected area must allow for expansion of operations to train on future platforms.

13 **2.3.2 ALTERNATIVES CONSIDERED**

14 The project team identified the following potential alternative locations to measure against the screening
15 criteria to determine if they would serve as feasible alternatives and thus merit detailed analysis in this
16 EA. Figure 2-15 depicts the locations of the considered alternative locations.

17 **2.3.2.1 San Clemente Island Alternative**

18 Under this alternative, the Proposed Action would occur at San Clemente Island, located approximately
19 60 miles (97 km) offshore of San Diego (Figure 2-15).

20 **2.3.2.2 Silver Strand Training Complex Alternative**

21 Under this alternative, the Proposed Action would occur at the Silver Strand Training Complex, located
22 on Coronado Island in southern San Diego County (Figure 2-15).

23 **2.3.2.3 MCB Camp Pendleton Alternative 1 (Red, Gold, and Green Beaches)**

24 Under this alternative, the Proposed Action would occur on and offshore of Red, Gold, and Green
25 beaches; in the Del Mar Boat Basin; and, on associated inland training areas at MCB Camp Pendleton. In
26 addition, activities would occur at a higher tempo (approximately 25 percent) than existing amphibious
27 training exercises, representing an increase over the recent historical baseline in terms of the number,
28 frequency, and scope of training.

29 Based on the purpose of and need for this Proposed Action, no other MCB Camp Pendleton beaches,
30 named or otherwise, have been identified as potential amphibious training areas. For example, the area
31 north of Gold Beach (San Onofre State Beach) and the area south of White Beach (the Marine Corps
32 Tactical Systems Support Activity) are not currently used for amphibious training. Furthermore, operators
33 have not currently identified these areas as potential training areas for this Proposed Action as no inland
34 access exists to facilitate the inland movement of large numbers of personnel and materiel in these
35 locations.

⁴ The measurement of the depths of oceans, seas, or other large bodies of water.



Figure 2-15
 West Coast Military Installations Initially Considered as
 Potential Locations for the Proposed Action

1 **2.3.2.4 MCB Camp Pendleton Alternative 2 (Red, Gold, Green, and White Beaches)**

2 Under this alternative, the Proposed Action would occur on and offshore of Red, Gold, Green, and White
 3 beaches; in the Del Mar Boat Basin; and, on associated inland training areas at MCB Camp Pendleton.
 4 Though very similar to Alternative 1, Alternative 2 would provide additional flexibility and enhanced
 5 geographic diversity for amphibious training exercises, as compared to Alternative 1 with the inclusion of
 6 White Beach. In addition, like Alternative 1, activities would occur at a higher tempo (approximately 25
 7 percent) than existing amphibious training exercises, representing an increase over the recent historical
 8 baseline in terms of the number, frequency, and scope of training. Based on the purpose of and need for
 9 this Proposed Action, no other MCB Camp Pendleton beaches, named or otherwise, have been identified
 10 as potential amphibious training areas for the same reason as presented in Section 2.3.2.3.

11 **2.3.2.5 Other West Coast Military Installation Alternative**

12 Under this alternative, the Proposed Action would be conducted at a west coast installation other than
 13 MCB Camp Pendleton, San Clemente Island, or the Silver Strand Training Complex. Other west coast
 14 installations include Vandenberg Air Force Base, Naval Air Station North Island, and Naval Base Ventura
 15 County (refer to Figure 2-15).

16 **2.3.2.6 No Action Alternative**

17 Under the No Action Alternative, MCB Camp Pendleton would continue to serve as the USMC's west
 18 coast amphibious training facility and activities similar to those previously described would continue to
 19 occur as described in Section 2.2, without an increase in annual exercise tempo, geographic expansion, or
 20 use of emerging platforms and technology.

21 **2.3.3 SCREENING CRITERIA AND ALTERNATIVES CONSIDERED**

22 Table 2-3 presents a comparison of the identified screening criteria against the possible alternatives
 23 considered.

Table 2-3. Comparison of Screening Criteria and Alternatives Initially Considered

| Criteria | | San Clemente Island | Silver Strand Training Complex | MCB Camp Pendleton Alternative 1 | MCB Camp Pendleton Alternative 2 | Other West Coast Military Installation ¹ | No Action Alternative |
|----------|-----------------------------------------|---------------------|--------------------------------|----------------------------------|----------------------------------|-----------------------------------------------------|-----------------------|
| 1 | Location on West Coast | X | X | X | X | X | X |
| 2 | Co-Location of Training Elements | | | X | X | | X |
| 3 | Simultaneous Training | | | X | X | | X |
| 4 | Support All Exercise Types | | | X | X | | X |
| 5 | 15 Vessels, ELCAS, & TRIDENT Pier | X | X | X | X | | X |
| 6 | TRIDENT Pier Construction | X | X | X | X | | X |
| 7 | OPDS/IPDS and Single Anchor Leg Mooring | X | X | X | X | | X |
| 8 | Safe Haven | X | X | X | X | | X |
| 9 | 5 Beach Acres | | | X | X | | X |

Table 2-3. Comparison of Screening Criteria and Alternatives Initially Considered

| Criteria | San Clemente Island | Silver Strand Training Complex | MCB Camp Pendleton Alternative 1 | MCB Camp Pendleton Alternative 2 | Other West Coast Military Installation ¹ | No Action Alternative | |
|--------------------------------|---------------------------------|--------------------------------|----------------------------------|----------------------------------|-----------------------------------------------------|-----------------------|-----------|
| 10 | 50 Upland Acres | | X | X | | X | |
| 11 | Surf Zone Watercraft Operations | X | X | X | X | X | |
| 12 | Onward Movement | | X | X | X | X | |
| 13 | Beach Characteristics | | X | X | | X | |
| 14 | Bathymetry and Slope | | X | X | | X | |
| 15 | Emerging Lighterage | X | X | X | X | | |
| 16 | Land Use Compatibility | X | X | X | X | X | |
| 17 | Future Platforms | X | X | X | X | | |
| Meets Purpose and Need? | | No | No | Yes | Yes | No | No |

Notes: An “X” indicates the potential alternative meets the associated selection criteria.

¹ Other west coast military installations considered were Vandenberg Air Force Base, Naval Air Station North Island, and Naval Base Ventura County; elements of Dawn Blitz 2013 did occur at Naval Base Ventura County.

ELCAS = Elevated Causeway; OPDS = Offshore Petroleum Disposal System; IPDS = Inland Petroleum Disposal System

1 2.3.4 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER ANALYSIS

2 As noted in Table 2-3, four of the six possible alternatives failed to meet all of the screening criteria: the
 3 San Clemente Island Alternative, the Silver Strand Training Complex Alternative, the Other West Coast
 4 Installation Alternative, and the No Action Alternative. The following paragraphs highlight the main
 5 reasons why the first three possible action alternatives were eliminated and not carried forward for further
 6 analysis in this EA; as described in later paragraphs, the No Action Alternative is carried forward as a
 7 baseline against which the impacts of the Proposed Action are compared.

8 2.3.4.1 San Clemente Island Alternative

9 As noted in Table 2-3, the San Clemente Island Alternative fails to meet several of the screening criteria
 10 and thus fails to meet the purpose of and need for the Proposed Action. Notably, San Clemente Island
 11 does not have sufficient available and suitable training space to simultaneously accommodate the training
 12 needs of all of the operational users. Furthermore, San Clemente Island does not have the right beach
 13 conditions or adjacent bathymetry to support JLOTS exercises and there are no regional transport
 14 capabilities as the island is isolated from the mainland. Therefore, CPF has eliminated the San Clemente
 15 Island Alternative from further analysis.

16 2.3.4.2 Silver Strand Training Complex Alternative

17 As noted in Table 2-3, the Silver Strand Training Complex fails to meet several of the screening criteria
 18 and thus fails to meet the purpose of and need for the Proposed Action. Notably, the Silver Strand
 19 Training Complex is not able to provide for the co-location of commands, equipment, facilities, and
 20 infrastructure to support existing and future training and personnel tempo requirements, nor does the
 21 Silver Strand Training Complex have the necessary geographic area (i.e., 5 beach acres or 50 upland
 22 acres) or beach characteristics to support the focused assemblage and execution of the Range of Military
 23 Operations associated with the entire breadth of amphibious training analyzed in this EA. As noted in
 24 Section 2.2.4, the Silver Strand Training Complex does have the ability to support small unit training
 25 exercises in support of LSEs like Dawn Blitz (which are focused on MCB Camp Pendleton); however, the
 26 Silver Strand Training Complex does not have the features required to support the full breadth of

1 amphibious training analyzed in this EA. In addition, the Silver Strand Training Complex already sustains
2 its own training activity schedules and priorities; thus, the Silver Strand Training Complex would be
3 unable to meet the tempo requirements of screening criteria #3 (“Simultaneous Training”). Therefore,
4 CPF has eliminated the Silver Strand Training Complex Alternative from further analysis as a location
5 that allows for the focused assemblage and execution of the Range of Military Operations associated with
6 amphibious training.

7 **2.3.4.3 Other West Coast Military Installation Alternative**

8 As noted in Table 2-3, the Other West Coast Military Installation Alternative fails to meet several of the
9 screening criteria and thus fails to meet the purpose of and need for the Proposed Action. The proximity
10 of MCB Camp Pendleton to the equipment, personnel, facilities, and organizational services needed for
11 the full range of amphibious training exercises is vital to the efficient execution of military training. The
12 other identified west coast military installations (i.e., Vandenberg Air Force Base, Naval Air Station
13 North Island, and Naval Base Ventura County) do not provide the comprehensive all-inclusive
14 amphibious training elements necessary for hosting the full range of proposed amphibious training
15 exercises. Therefore, CPF has eliminated the Other West Coast Military Installation Alternative from
16 further analysis.

17 While the aforementioned west coast military installations cannot accommodate the Proposed Action,
18 Naval Base Ventura County can accommodate certain elements of amphibious training exercises focused
19 at other installations (e.g., portions of Dawn Blitz 2013 did occur at Naval Base Ventura County).
20 However, any future amphibious training activity that might occur at Naval Base Ventura County is
21 outside the scope of this EA.

22 **2.3.5 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS**

23 As presented in Table 2-3, two action alternatives meet all of the screening criteria: MCB Camp
24 Pendleton Alternative 1 (Red, Gold, and Green beaches) and MCB Camp Pendleton Alternative 2 (Red,
25 Gold, Green, and White beaches). In addition, while not satisfying the screening criteria, per CEQ
26 regulations, this EA also analyzes the No Action Alternative, which serves as a baseline against which the
27 impacts of the Proposed Action are compared.

28 **2.4 ALTERNATIVES**

29 The Proposed Action consists of an increase in amphibious training exercises at MCB Camp Pendleton.
30 Proposed amphibious training would be similar to existing amphibious training, but at an increased
31 annual tempo and covering a larger area at MCB Camp Pendleton. In addition, new platforms and
32 technologies would be integrated into training under the Proposed Action. CPF has identified two action
33 alternatives for implementing the Proposed Action: Alternatives 1 and 2. In addition, the continuation of
34 existing amphibious training exercises is presented under the No Action Alternative. The following
35 sections describe each of these alternatives.

36 **2.4.1 ALTERNATIVE 1: MCB CAMP PENDLETON – RED, GOLD, AND GREEN BEACHES**

37 **2.4.1.1 Location and Frequency**

38 Under Alternative 1, amphibious training exercises (JLOTS, MPF, FEXs, and LSEs) would occur on Red,
39 Gold, and Green beaches, similar to those described under Section 2.2 and within the operational areas
40 presented on Figures 2-16 and 2-17, and within and adjacent to the Del Mar Boat Basin as presented on
41 Figure 2-18. The operational areas were developed based on input from operators and known
environmental constraints at MCB Camp Pendleton. The locations of all proposed exercise elements

1 would avoid impacting known resources, and would be identified and used in compliance with Marine
2 Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures
3 (MCIWEST-MCBCAMPENO 3500.1). As part of Alternative 1, emerging platforms and new
4 technologies would be integrated into future exercises. In addition, ship-to-ship refueling operations
5 would occur more than 3 nautical miles (5.6 km) offshore.

6 The average annual amphibious training exercise tempo would increase by approximately 25 percent (as
7 compared to existing conditions), resulting in an average annual total of approximately 15 amphibious
8 training exercises at MCB Camp Pendleton (as compared to the baseline of approximately 12 amphibious
9 training exercises each year). On average, amphibious training exercises would occur as follows: one
10 JLOTS exercise every three years, one MPF exercise every year, four LSEs every year, and up to 10 FEX
11 activities every year. Depending on scheduling and training needs, some years would experience a lower
12 or higher number of total amphibious training exercises. This estimated annual percent increase in
13 training was developed by CPF in response to anticipated future training needs, as provided by each
14 operational organization, based on their respective training requirements.

15 Under Alternative 1, amphibious training exercises would occur in the following areas:

- 16 • Offshore of Red, Gold, and Green beaches
- 17 • Shoreline areas of Red, Gold, and Green beaches (including vehicle crossing of Las Flores Creek
18 if the creek is open to the sea during the exercise)
- 19 • State Lease Areas, to include the surf zone, San Onofre State Beach areas, and the San Mateo
20 Campground
- 21 • Various existing improved and unimproved access roads and pathways from Green Beach and the
22 State Lease Areas to the Sierra Training Area
- 23 • Viewing area between Red and Gold beaches
- 24 • Small Convoy Staging Area at Red Beach on Las Pulgas Road
- 25 • Arrival and Assembly Operations Group/Tactical Operations Center at Red Beach
- 26 • Vehicle marshaling area at Skull Beach and Training Area Uniform
- 27 • Convoy staging areas on El Camino Real and Artillery Firing Areas 15 and 16
- 28 • Portions of Artillery Firing Areas 15 and 16 for Base Camp and Life Support Area
- 29 • Del Mar Boat Basin
- 30 • Fallbrook Junction and Oceanside Railroad Yard
- 31 • Various existing paved and dirt access roads on MCB Camp Pendleton
- 32 • Existing helicopter landing zones, UAV launch/recovery areas, and confined area landing sites
- 33 • Airspace above the aforementioned areas (Figure 2-19)

34 As with all the beaches along MCB Camp Pendleton's coast, Green Beach is essential to provide support
35 for the revalidation of amphibious training as per Headquarters Marine Corps newly promulgated training
36 guidance to Marine Expeditionary Forces (USMC 2013b). Conducting amphibious training exercises at
37 Green Beach and the State Lease Areas, to include the surf zone and San Onofre State beaches, provides
38 crucial access to the northern training areas established by MCB Camp Pendleton, enhancing amphibious
39 proficiency for future USMC worldwide contingency operations.



Figure 2-16 Amphibious Training Exercise Areas at Red and Gold Beaches and Inland Training Areas

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Figure 2-17 Amphibious Training Exercise Areas at Green Beach, State Lease Area, and Inland Training Areas

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Figure 2-18
Amphibious Training Exercise Areas at the Del Mar Boat Basin

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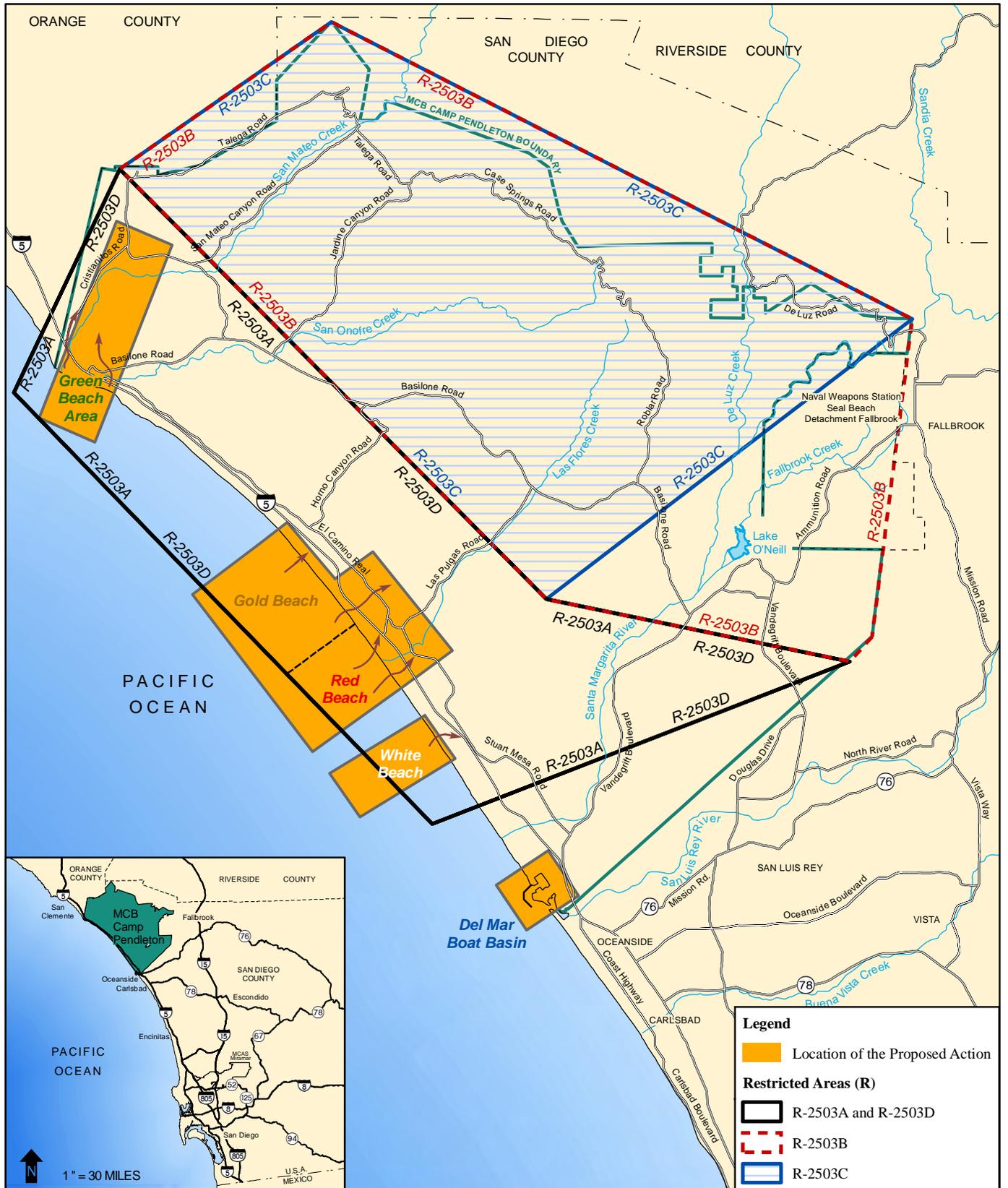
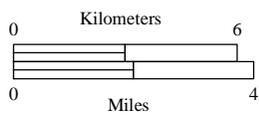


Figure 2-19
Special Use Airspace at
MCB Camp Pendleton



1 Green Beach provides a landing area for amphibious training activities and is an integral element of the
2 MCB Camp Pendleton Northern Maneuver Corridor. Once a unit has established their beachhead and
3 starts to move inland to their objectives, the two main branches of the Northern Maneuver Corridor
4 Access Route are through the Sierra Training Area for both tracked and wheeled vehicles, and a high
5 speed access route along Cristianitos Road for wheeled vehicles only. The San Mateo Campground
6 provides significant training exercise capabilities because it supports a diverse mission-set, such as an
7 advance logistical base, command post, medical facility or a combination of these, with rapid accessibility
8 to Cristianitos Road. As a result, the San Mateo Campground serves as a vital piece of training ground to
9 support realistic training scenarios and movement of units to their objectives inland of the base via the
10 Cristianitos Gate and the Sierra Training Area.

11 Green Beach and the State Lease Areas would also have the potential to serve as a beachhead for JLOTS
12 exercises. JLOTS-related activity would include the establishment of a logistics Center of Operation that
13 would monitor and coordinate the offload and dissemination of vehicles, rolling stock, and supplies. The
14 Center of Operation would also manage personnel replacements in support of the combat unit that would
15 come ashore at Green Beach or within the State Lease Areas.

16 As depicted on Figure 2-17, use of Green Beach and the State Lease Areas would provide access to MCB
17 Camp Pendleton's northern training corridor, which includes portions of the State Lease Areas. Portions
18 of the State Lease Area beaches, trails, and surf zone would be subject to temporary closure during
19 amphibious training exercises.

20 Under the Proposed Action, certain amphibious training exercises would necessitate the closure of the
21 San Mateo Campground for approximately 30 days each calendar year. Closures of the San Mateo
22 Campground could occur several times within any year, as dictated by training requirements, and could
23 be associated with one, or more than one exercise. While training requirements do and will fluctuate, this
24 EA analyzes the most likely scenario of approximately 30 days of campground closure each calendar
25 year. The closures could occur over consecutive days, or sporadically for a day or two or several weeks
26 throughout the year. There could be some years in which amphibious training exercises would not need to
27 use the San Mateo Campground, and as such, there would be no campground closures in these years.

28 In accordance with the 1971 Lease Agreement, *Agreement of Lease between the State of California*
29 *Department of Parks and Recreation and the United States of America* (USA 1971)⁵, advance
30 coordination would be conducted through the office of the California Department of Parks and
31 Recreation. At a minimum, notices for use of State Lease Areas would be provided in accordance with the
32 1971 Lease Agreement (USA 1971). The DoD would strive to provide advance notice of scheduled
33 amphibious training exercises to the California Department of Parks and Recreation to minimize potential
34 impacts to recreation, notably potential campers at San Mateo Campground. When planning information
35 supports doing so, the California Department of Parks and Recreation would be notified at least six
36 months' in advance of an exercise that would require the use (and therefore temporary closure) of the San
37 Mateo Campground. Potential campground closure windows would be communicated by the exercise
38 proponent to the California Department of Parks and Recreation as soon as information supports doing so.

⁵ *Section L of the Lease specifies* "In the event the Government shall schedule a formal military training exercise requiring the use of all or a substantial portion of the Leased Property, the Government shall give the Lessee (the State) five (5) days' notice except where military necessity requires a shorter clearance period in which case not less than forty-eight (48) hours' notice may be given. Upon receipt of such notice, and before the beginning of said scheduled training exercise, the Lessee (the State) shall cause the Leased Property to be cleared of all persons occupying the Leased Property under the authorization of the Lessee, together with their personal property, and shall continue to exclude such persons and personal property from the Leased Property during the said training exercise."

1 Then, as the exercise draws closer and the training days are defined, the actual campground closure days
2 would be communicated to the California Department of Parks and Recreation, likely resulting in making
3 some of the previously “closed” days (i.e., as identified in the initially communicated campground
4 “closure window”) becoming available to the public for camping.

5 Units conducting amphibious training using Amphibious Assault Vehicles to land at Green Beach and
6 within the State Lease Areas would access various existing improved and unimproved roads and
7 pathways from the beach to the Sierra Training Area to conduct deliberate attacks, movement-to-contact
8 offensive operations, Marine Expeditionary Unit raids, patrolling, and Humanitarian and Disaster Relief
9 operation training. Training in the upland Sierra Training Area has been covered by other NEPA
10 documentation (i.e., MCB Camp Pendleton 2011b, 2014b).

11 As noted in Section 2.3.4.2, related small unit training exercises occur at the Silver Strand Training
12 Complex. Screening criteria #12 (“Onward Movement;” refer to Section 2.3.1) identifies the need for a
13 selected area to allow for the onward movements of personnel and materiel to other
14 installations/locations. Thus, Alternative 1 would include the ability for small units to transport their
15 personnel and materiel between the Silver Strand Training Complex and MCB Camp Pendleton as part of
16 the breadth of exercises analyzed in this EA. Such transportation would generally consist of
17 approximately 20 vehicles using major regional transportation corridors (round-trip) and would occur up
18 to four times per year.

19 Under Alternative 1, an approximately 25 percent increase in the number of annual amphibious training
20 exercises at MCB Camp Pendleton is expected. The expected increase is attributable to training plans
21 developed as part of the National Military Strategy. With the drawdown of combat operations in Iraq and
22 Afghanistan, more forces will be conducting home-base training. Littoral logistics capability has been
23 identified as a core competency required for future military readiness. By analyzing the environmental
24 effects in a comprehensive fashion, operational planners will have greater flexibility in designing
25 amphibious training exercises that are consistent with the breadth of the analysis in this EA.

26 **2.4.1.2 Emerging Platforms and Technology**

27 Under Alternative 1, new platforms and equipment would be incorporated into amphibious training
28 exercises. Likely additions include, but are not limited to, the Joint High Speed Vessel. The Joint High
29 Speed Vessel program is procuring high-speed transport vessels for use by the Navy and the Army. These
30 vessels will be increasingly used for the fast transportation of personnel, military vehicles, and equipment.
31 The Joint High Speed Vessel is capable of transporting 600 tons (544 metric tons) more than 1,200
32 nautical miles (2,220 km) at an average speed of 35 knots (65 km/hour). The ships are capable of
33 operating in shallow-draft ports and waterways, interfacing with roll-on/roll-off discharge facilities, and
34 on/offloading a combat-loaded Abrams Main Battle Tank. Other features include an aviation flight deck
35 to support day and night air vehicle launch and recovery operations. The first ship (USNS Spearhead) was
36 delivered to the Navy in 2012 (Navy 2012a). Figure 2-20 presents a design drawing of a Joint High Speed
37 Vessel (GlobalSecurity.org 2002).

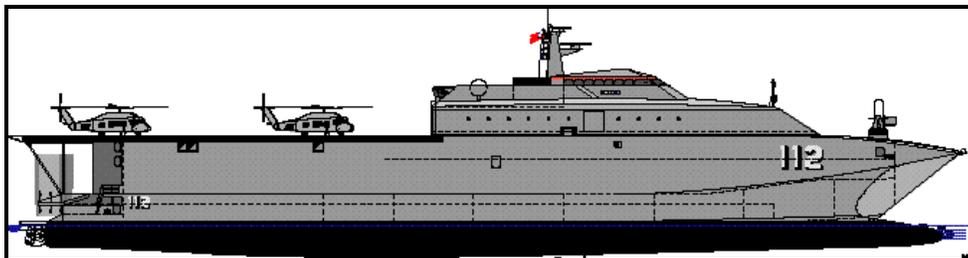


Figure 2-20. Design Drawing of a Joint High Speed Vessel

1 Should additional emerging platforms and technology beyond the Joint High Speed Vessel be proposed
2 for inclusion in future amphibious training exercises, the platform and/or technology would be reviewed
3 for NEPA compliance with this EA. If the future emerging platforms and/or technology are determined to
4 be outside of the analysis of this EA, then additional analysis would be conducted as required.

5 **2.4.1.3 Ship-to-Ship Refueling**

6 Ships involved in amphibious exercises have the means to transfer fuel to other ships at sea; however,
7 during Pacific Horizon 11 (an MPF exercise), lighterage craft had to return to the Del Mar Boat Basin to
8 refuel, a process that took time (an hour each way), used additional fuel, and complicated the efficient
9 execution of the exercise. Under Alternative 1, lighterage craft would be able to be refueled at sea from a
10 Large, Medium-Speed Roll-On/Roll-Off Ship, more than 3 nautical miles (5.6 km) offshore. Refueling
11 activities would be conducted in accordance with the Spill Prevention Control and Countermeasure Plan
12 (Navy 2013a), the Hawaii-Southern California Testing and Training Activities (HSTT) EIS (Navy
13 2013b), and Navy spill prevention protocols. The Navy uses special care to minimize the potential for
14 spills during at-sea refueling operations. To minimize the potential for spills of JP5 (the fuel used at sea)
15 during at-sea refueling operations, personnel would follow Military Sealift Command Instruction
16 5090.1C, *Environmental Protection Program* and planning procedures and instructions such as those
17 outlined in 33 CFR 156.150.

18 **2.4.2 ALTERNATIVE 2: MCB CAMP PENDLETON – RED, GOLD, GREEN, AND WHITE BEACHES**

19 Under Alternative 2, amphibious training exercises (JLOTS, MPF, FEXs, and LSEs) would occur on Red,
20 Gold, and Green beaches and the Del Mar Boat Basin, identical to those described under Alternative 1
21 (see Section 2.4.1 and Figures 2-16, 2-17, and 2-18), but would also include amphibious training at White
22 Beach and offshore approximately 3 nautical miles (5.6 km) (Figure 2-21). The majority of annual
23 amphibious training exercises would continue to be centered on Red and Gold beaches; however,
24 exercises would also occur on Green and White beaches.

25 Alternative 2 would allow exercise planners to utilize additional beach and training areas at MCB Camp
26 Pendleton, as compared to Alternative 1. Currently, White Beach is not used for amphibious training
27 exercises but is used for on-going Landing Craft Air Cushion training. With the increased anticipated
28 amphibious training requirements, having the ability to use White Beach and offshore of White Beach to
29 approximately 3 nautical miles (5.6 km) would provide additional flexibility and enhanced geographic
30 diversity for amphibious training exercises, as compared to Alternative 1. Specifically, the ability to use
31 White Beach as part of amphibious training exercises would enhance training value by providing an
32 additional beach when planning exercises, thus providing greater flexibility across four beaches, not three.
33 In addition, the use of White Beach would also insert setting variability to the exercise, enhancing the
34 training environment through beach diversity.

35 Activities at White Beach would include amphibious activities starting approximately 3 nautical miles
36 (5.6 km) offshore and then proceeding through the surf zone and up onto the beach. From the beach,
37 equipment would be transferred to inland training ranges. Vehicles would not be staged at White Beach
38 except for short periods when they are waiting to be transported or driven to inland staging areas.

39 Under Alternative 2, the average annual amphibious training exercise tempo would also increase by
40 approximately 25 percent (as compared to existing conditions), resulting in an approximate average
41 annual total of 15 amphibious training exercises at MCB Camp Pendleton.



Figure 2-21
 Alternative 2: Proposed Amphibious Training Exercise Areas at White Beach

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1 **2.4.3 NO ACTION ALTERNATIVE**

2 Though the No Action Alternative is not considered a reasonable alternative because the No Action
 3 Alternative does not meet all of the screening criteria or satisfy the purpose of and need for the Proposed
 4 Action, the No Action Alternative is required by CEQ regulations (40 CFR 1502.14[d]) as a baseline
 5 against which the impacts of the Proposed Action are compared. In this EA, the No Action Alternative
 6 represents the continuation of existing training exercises as described in Section 2.2.

7 Under the No Action Alternative, MCB Camp Pendleton would continue to be the USMC’s west coast
 8 amphibious training facility and activities similar to those described in Section 2.2 would continue to
 9 occur. JLOTS, MPF, and FEX would continue to occur on Red and Gold beaches, the Del Mar Boat
 10 Basin, and existing inland training areas. The No Action Alternative would also provide for the
 11 continuation of LSEs in the Green Beach area and associated existing inland training areas. Continuation
 12 of the No Action Alternative may result in a reduction in the operational readiness of joint U.S. military
 13 forces related to large-scale amphibious training and logistical support.

14 **2.4.4 COMPARISON OF ALTERNATIVES**

15 In summary, the No Action Alternative (i.e., existing conditions) would allow for the continuation
 16 amphibious logistic training exercises of the same types, without change in the nature or scope of military
 17 activities, centered on Red and Gold beaches and including the Del Mar Boat Basin and inland training
 18 areas. The No Action Alternative would also provide for the continuation of LSEs at Green Beach, the
 19 adjacent State Lease Areas, and associated existing inland training areas. Implementation of Alternative 1
 20 would allow for the full suite of amphibious training exercises at a higher average annual tempo
 21 (approximately 25 percent) at Red, Gold, and Green beaches, to include introducing future emerging
 22 technologies and at-sea refueling into training. Alternative 2 is identical to Alternative 1 except that
 23 Alternative 2 also includes White Beach, thus providing additional flexibility and enhanced geographic
 24 diversity for amphibious training exercises. Table 2-4 summarizes the beaches to be used under each of
 25 the alternatives. Table 2-5 provides a summary comparison of the generally anticipated exercise
 26 component features under all alternatives.

Table 2-4. Comparison of Alternatives

| Condition | Location of Annual Amphibious Training Exercises, by Beach | | | |
|-----------------------|------------------------------------------------------------|------|----------------|-------|
| | Red | Gold | Green | White |
| No Action Alternative | ✓ | ✓ | ✓ ¹ | |
| Alternative 1 | ✓ | ✓ | ✓ | |
| Alternative 2 | ✓ | ✓ | ✓ | ✓ |

Note: ¹ LSEs only.

27 **2.5 PREFERRED ALTERNATIVE**

CPF has identified Alternative 2 as the Preferred Alternative.

Table 2-5. Summary Comparison of Estimated Average Exercise Component Features under All Alternatives

| Component Feature | No Action (Existing) | | | | Alternative 1 | | | | Alternative 2 | | | |
|------------------------------------|----------------------|-----|-----|-----|---------------|-----|-----|-----|---------------|-----|-----|-----|
| | JLOTS | MPF | LSE | FEX | JLOTS | MPF | LSE | FEX | JLOTS | MPF | LSE | FEX |
| Beaches | | | | | | | | | | | | |
| Red | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Gold | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Green | - | - | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| White | - | - | - | - | - | - | - | - | ✓ | ✓ | ✓ | ✓ |
| Offshore Components | | | | | | | | | | | | |
| MPF Ships (or equivalent) | 3 | 1 | 1 | - | 3 | 1 | 1 | - | 3 | 1 | 1 | - |
| Utility Boats | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| LCU | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 2 |
| INLS Causeway Ferries | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 |
| INLS Warping Tugs | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 |
| MCS | 1 | - | - | - | 1 | - | - | - | 1 | - | - | - |
| LSV | 1 | - | - | - | 1 | - | - | - | 1 | - | - | - |
| LCM 8s | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 2 |
| RRDF | 2 | 1 | - | - | 2 | 1 | - | - | 2 | 1 | - | - |
| Tugs | 2 | - | - | - | 2 | - | - | - | 2 | - | - | - |
| OPDS | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 1 | 1 | - | - |
| ABLTS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| IPDS | 1 | - | - | - | 1 | - | - | - | 1 | - | - | - |
| Tactical Craft | 3 | 1 | 2 | - | 3 | 1 | 2 | - | 3 | 1 | 2 | - |
| LCAC | - | - | 2 | 2 | - | - | 2 | 2 | - | - | 2 | 2 |
| Joint High Speed Vessel | - | - | - | - | 1 | 1 | 1 | - | 1 | 1 | 1 | - |
| Littoral Components | | | | | | | | | | | | |
| ELCAS | 1 | - | - | - | 1 | - | - | - | 1 | - | - | - |
| TRIDENT Pier | 1 | - | - | - | 1 | - | - | - | 1 | - | - | - |
| Floating Causeway | 1 | - | - | - | 1 | - | - | - | 1 | - | - | - |
| Security Boats | 12 | 3 | 2 | - | 12 | 3 | 2 | - | 12 | 3 | 2 | - |
| Side Loadable Warping Tug | 6 | - | - | - | 6 | - | - | - | 6 | - | - | - |
| Beach Components | | | | | | | | | | | | |
| Lighter Amphibious Resupply Cargos | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 2 |
| Bulldozers | 5 | 3 | 1 | 1 | 5 | 3 | 1 | 1 | 5 | 3 | 1 | 1 |
| Tactical Vehicles | 10 | 5 | 2 | 2 | 10 | 5 | 2 | 2 | 10 | 5 | 2 | 2 |
| AAVs | 10 | 10 | 18 | - | 10 | 10 | 18 | - | 10 | 10 | 18 | - |
| Combat Rubber Raiding Craft | - | - | 12 | - | - | - | 12 | - | - | - | 12 | - |
| Large Cargo Transport Vehicles | 40 | 20 | 5 | - | 40 | 20 | 5 | - | 40 | 20 | 5 | - |
| Trailer sensor platforms | 2 | 1 | 1 | - | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| Maritime Operations Center | 1 | 1 | 1 | - | 1 | 1 | 1 | - | 1 | 1 | 1 | - |
| Joint Operations Center | 1 | - | 1 | - | 1 | - | 1 | - | 1 | - | 1 | - |

Table 2-5. Summary Comparison of Estimated Average Exercise Component Features under All Alternatives

| Component Feature | No Action (Existing) | | | | Alternative 1 | | | | Alternative 2 | | | |
|-------------------------------------|----------------------|-----------|-------------|--------|---------------|-----------|-------------|--------|---------------|-----------|-------------|--------|
| | JLOTS | MPF | LSE | FEX | JLOTS | MPF | LSE | FEX | JLOTS | MPF | LSE | FEX |
| Support Tents | 8 | 6 | 4 | 4 | 8 | 6 | 4 | 4 | 8 | 6 | 4 | 4 |
| UAV | 11 | - | 5 | 5 | 11 | - | 5 | 5 | 11 | - | 5 | 5 |
| Upland Components | | | | | | | | | | | | |
| Base Camp Tents (all types) | 315 | 75 | 40 | 40 | 315 | 75 | 40 | 40 | 315 | 75 | 40 | 40 |
| Tactical Water Purification System | 6 | 3 | 3 | 1 | 6 | 3 | 3 | 1 | 6 | 3 | 3 | 1 |
| Light Plants | 17 | 6 | 6 | 6 | 17 | 6 | 6 | 6 | 17 | 6 | 6 | 6 |
| Miscellaneous Trucks ¹ | 55 | 21 | 20 | 15 | 55 | 21 | 20 | 15 | 55 | 21 | 20 | 15 |
| Miscellaneous Vehicles ² | 119 | 47 | 40 | 25 | 119 | 47 | 40 | 25 | 119 | 47 | 40 | 25 |
| Generators | 36 | 15 | 15 | 10 | 36 | 15 | 15 | 10 | 36 | 15 | 15 | 10 |
| Vans/Buses | 16 | 10 | 10 | 5 | 16 | 10 | 10 | 5 | 16 | 10 | 10 | 5 |
| Portable Toilets (all areas) | 35 | 13 | 10 | 15 | 35 | 13 | 10 | 15 | 35 | 13 | 10 | 15 |
| Air Components | | | | | | | | | | | | |
| CH-46s/MV-22s | 2 | 1 | 2 | - | 4 | 2 | 2 | - | 4 | 2 | 2 | - |
| CH-53s/MV-22s | 2 | 1 | 2 | - | 4 | 2 | 2 | - | 4 | 2 | 2 | - |
| Personnel | 2,000-3,500 | 600-1,500 | 1,000-3,000 | 30-800 | 2,000-3,500 | 600-1,500 | 1,000-3,000 | 30-800 | 2,000-3,500 | 600-1,500 | 1,000-3,000 | 30-800 |
| Duration (days) | 90 | 30 | 10-21 | 7-14 | 90 | 30 | 10-21 | 7-14 | 90 | 30 | 10-21 | 7-14 |

Notes: ¹ Miscellaneous trucks consist of: flatbed trucks, Medium Tactical Vehicle Replacement vehicles, Rough Terrain Cargo Handling vehicles, High Mobility Multipurpose Wheeled Vehicles, maintenance trucks, fuel trucks, Medium Tactical Vehicle Replacement dump trucks, Medium Tactical Vehicle Replacement wreckers, light service support vehicles, water trucks, skip loaders, and lube trucks.

² Miscellaneous vehicles consist of: tractors, trailers, ambulances, forklifts, telehandlers, water bulls, field kitchens, graders, and refrigerators.

LCU = Landing Craft Utility; INLS = Improved Navy Lighterage System; MCS = Modular Causeway System; LSV = Logistics Support Vessel;

LCM = Landing Craft Mechanized; RRDF = Roll-on/Roll-off Discharge Facility; OPDS = Offshore Petroleum Discharge System; ABLTS = Amphibious Bulk Liquid Transfer System;

IPDS = Inland Petroleum Discharge System; LCAC = Landing Craft Air Cushion; ELCAS = Elevated Causeway; AAV = Amphibious Assault Vehicle; UAV = Unmanned Aerial Vehicle.

1 **CHAPTER 3**

2 **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

3 This chapter describes the existing environmental conditions and potential environmental consequences
4 for the following resource areas analyzed in detail: geological resources, water resources, biological
5 resources, land use, cultural resources, air quality, transportation and circulation, socioeconomics, and
6 hazardous materials and waste. For those resource areas analyzed in detail, sections are organized into
7 marine and terrestrial subsections. The dividing mark between marine and terrestrial resources is the high
8 tide line. Section 1.6 presents a summary of those resources areas not carried forward for detailed
9 analysis.

10 Proposed amphibious training exercises are similar in scope and size to other previously analyzed,
11 approved, and on-going amphibious training exercises at MCB Camp Pendleton within previously
12 disturbed existing training areas. The impacts associated with activities described under the Proposed
13 Action would be consistent with the impacts associated with training activities of similar scope and size
14 that have and continue to occur at MCB Camp Pendleton since its establishment. These past and present
15 similar training activities have not resulted in significant impacts to resources.

16 All ground transport of vehicles and personnel would be restricted to existing ranges, roads, and off-road
17 areas as authorized in the Range and Training Area regulations. All participants in all exercises would
18 comply with Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing
19 Operating Procedures (MCIWEST-MCBCAMPENO 3500.1) and all applicable established mitigation
20 measures (including the 2011 EA and 2014 Supplemental EA for the Establishment of Sierra Training
21 Area [MCB Camp Pendleton 2011b, 2014a]). For activities not covered under previous NEPA actions,
22 the Proposed Action would comply with the Biological Opinion (BO) for Programmatic Activities and
23 Conservation Plans in Riparian and Estuarine/Beach Ecosystems on MCB Camp Pendleton (U.S. Fish
24 and Wildlife Service [USFWS] 1995). For each resource area, permits and mitigation measures have been
25 identified and would be incorporated into the implementation of each alternative.

26 Table 3.0-1 provides a summary of environmental consequences and mitigation measures for the No
27 Action Alternative, Alternative 1, and Alternative 2 for each resource area analyzed in detail. The
28 mitigation measures presented under the No Action Alternative have been, and will continue to be
29 integrated into each amphibious training exercise.

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Geological Resources</p> | <p>Temporary and minor impacts to marine sediments from anchors and surf zone/beach activities. Temporary, localized changes in beach contours and topography. Temporary, minor increase in erosion potential from limited grading and foot/vehicle disturbance.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Any area excavated on the beach would be filled in at the conclusion of the exercise. 2. Vehicles, personnel, and equipment would be limited to existing roads and previously compacted and developed areas. 3. If amphibious training exercises disturb more than 1.0 acre (0.4 ha), a Construction General Permit would be obtained and the provisions of the permit would be implemented. 4. All erosion and sediment control measures would be inspected and maintained to ensure proper integrity and function during the entire training activity period. All stabilization and structural controls would be inspected after any major storm. Any damage would be repaired, and the controls would be maintained for optimum performance. 5. Disturbed slopes or other graded features would be properly stabilized. Disturbed areas would be protected with certified weed-free straw wattles or geotextile fabric. Whenever possible, grading would be phased to limit disturbed ground, soil exposure, and sediment runoff/fugitive dust potential. Drain inlets would be protected using gravel bags or straw wattles. No plastic monofilament materials would be used. Check dams would be used to reduce runoff velocities where necessary. 6. The exercise proponent would employ dust abatement measures (e.g., wetting of soils) within the Base Camps to minimize fugitive dust emissions during training exercises. Spraying would be done lightly to avoid the accumulation of surface water. 7. Tent Camps, Life Support Areas, and vehicle laydown area entrances and equipment laydown areas would be stabilized with aggregate. Steel ribbed plates may be used in addition to aggregate. | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to geological resources in this area.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>8. Any straw wattles, straw or hay bales used would be certified weed-free. All erosion control seed mixes would consist of native plant species. No plastic monofilament materials would be used.</p> <p>9. Any dirt piles would be covered with tarps, plastic, or geotextile fabric with the edges sealed with sandbags, bricks, lumber, etc. to minimize erosion. No plastic monofilament materials would be used.</p> <p>10. Site-specific BMPs would be implemented to minimize erosion and sedimentation impacts. These BMPs would be implemented to ensure that any stockpiled soil would not flow into nearby surface waters as a result of a high intensity rain event.</p> <p>11. Elements utilized as part of erosion control BMPs would be evaluated before, during, and after rain events. Appropriate actions would be taken if BMPs are found to be inadequate or ineffective. Damaged or worn silt fences, wattles, gravel bags, etc. would be replaced.</p> <p>12. All ground transport of vehicles and personnel would be restricted to existing ranges, roads, and off-road areas as authorized in Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures (MCIWEST-MCBCAMPENO 3500.1).</p> | | |
| <p>Water Resources</p> | <p>Suspended sediment and localized increases in turbidity generated from surf zone activities. Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter marine waters; however, spill potential would be reduced/eliminated through mitigation measures. No permanent increase in impervious surfaces. Potential for erosion to impact water quality.</p> <p>Permits: The following agency permits or documentation and their associated conditions have been and would continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Clean Water Act Section 401 Water Quality Certification (via the San Diego RWQCB) 2. Clean Water Act Section 404 & Rivers and Harbors Act Section 10 (via the USACE) 3. CCND from the CCC | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. At-sea refueling would result in potential for fuel spills; however, spill potential would be reduced/eliminated through mitigation measures.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the</p> | <p>Impacts would be similar to those presented for Alternative 1. Vehicle ingress from the White Beach landing area would use existing roads, thus not increasing the potential for additional impacts to water resources in the White Beach area.</p> <p>Permits: Permit requirements would be the same as identified for the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for Alternative 1.</p> |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| | <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. In-water construction activities would abide by Section 401, 404, and 10 permit provisions. 2. Areas for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants would be located above the ordinary high water mark. Materials that could potentially impact stormwater runoff would be stored in lockers, on pallets, inside rubber berms, indoors, or under a cover. Material storage areas would be located away from storm drains and surface waters. 3. The exercise proponent would be responsible for spill prevention and proper hazardous material storage and handling (secondary containment), and must comply with the Spill Prevention Control and Countermeasure Plan (Navy 2013a). The unit would keep a Petroleum Oil Lubricants spill kit on site. If a hazardous material spill were to occur, the unit would be responsible for their own hazardous material accidents in accordance with applicable federal, military, state, and local laws and regulations including clean up, and associated costs. For response and reporting, they would follow the MCB Camp Pendleton Integrated Contingency Plan guidance, available by contacting MCB Camp Pendleton Environmental Security Spill Prevention and Planning Branch at 760-725-9743/9768. All spills would be reported immediately to the Spill Prevention and Planning Branch, and only this Branch would make the appropriate regulatory reporting notifications for spill incidents. 4. The exercise proponent would obtain a Graywater Permit from MCB Camp Pendleton Environmental Security if a graywater disposal (percolation pit) is warranted for the exercise. The following measures would be adhered to: <ol style="list-style-type: none"> A. The requesting unit would submit a completed graywater application to MCB Camp Pendleton Environmental Security to initiate the environmental review process. B. The unit would contact the MCB Camp Pendleton Environmental Security Wastewater Branch at 760-725-0141 to arrange for percolation testing and to | <p>No Action Alternative and as follows:</p> <ol style="list-style-type: none"> 7. To minimize the potential for spills during at-sea refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C, <i>Environmental Protection Program</i> and planning procedures and instructions such as those outlined in 33 CFR 156.150. | |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>obtain a Graywater Permit and provisions (e.g., percolation pit dimensions).</p> <p>C. The exercise proponent would follow the conditions outlined in the approved Graywater Permit.</p> <p>D. During the exercise, if the percolation pit fails to drain, or overfills, the unit would contact the Facilities Maintenance Department at 760-725-1732 for assistance.</p> <p>5. Fueling and maintenance of equipment would not take place closer than 100 ft (30 m) to surface water drainages.</p> <p>6. The exercise proponent would ensure that all trash and debris resulting from the exercises would be properly disposed of and would not be discarded onsite.</p> | | |
| <p>Biological Resources</p> | <p>Impacts to marine flora and fauna resulting from movement or anchoring of vessels and surf zone activities would be temporary and minor. Small fish and invertebrates would be subject to mortality from the pumps used for the Offshore Petroleum Discharge System and Amphibious Bulk Liquid Transfer System. Potential for injury or mortality to fish in the immediate area (< 328 ft [100 m]) from pile driving. Potential for harassment to marine mammals. Potential for direct and indirect impacts to kelp and eelgrass by vessels, amphibious vehicles, and turbidity. Direct impacts to special status species and their habitat would be avoided.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. All training activities would continue to be consistent with the Riparian Biological Opinion (U.S. Fish and Wildlife Service 1995). 2. A standing watch for marine mammals and sea turtles would be present during all Elevated Causeway installation/removal activities. 3. Before the start of pile driving each day, after each break of more than 30 minutes, and if any increase in the intensity is required, the Navy would use a ramp-up procedure. The procedure involves a slow increase in the pile driving to allow animals in the area to disperse. 4. Consistent with the HSTT Proposed Rule (NMFS 2013a) and the HSTT Letter of Authorization (NMFS 2013b), | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. The higher annual training tempo would result in a greater potential for impacts to habitats, communities, wildlife, and special status species; however, spill potential would be reduced/eliminated through mitigation measures. At-sea refueling would result in the potential for temporary impacts to marine biological resources.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1. The additional activities and the inclusion of White Beach in amphibious training exercises would not have a significant impact on marine or terrestrial biological resources in the White Beach area.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative, and would also include these White Beach-specific measures:</p> <ol style="list-style-type: none"> 17. Consistent with current range regulations, military vehicle operations transiting parallel to White Beach during tern and plover breeding season would keep one wheel in the water to minimize potential impacts to these species. 18. To the maximum extent possible, vehicles and personnel accessing the beach at White Beach during the period of March 1 to September 15 shall follow a route along the base of the northerly bluff to maintain the maximum distance from the tern |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Elevated Causeway pile driving would cease in the event that a marine mammal is sighted within a 180 ft (55 m) radius of the pile, and would not resume until the animal has voluntarily left the area.</p> <p>5. Mitigation and monitoring measures as addressed in the HSTT EIS/Overseas EIS (Navy 2013b) and associated HSTT Letter of Authorization to take marine mammals (NMFS 2013a, b) and BO (NMFS 2013c) would be implemented. The sighting and corresponding information would be logged per the requirements of the HSTT BO (NMFS 2013c).</p> <p>6. Visual reconnaissance would be used to avoid kelp.</p> <p>7. Before conducting the first exercise under the proposed action, an eelgrass survey will be conducted in the DMBB to provide a pre-action baseline. Since there are multiple exercises associated with the action, a single “post-construction survey” would be conducted at the conclusion of the USACE permit period and used to determine whether there has been any net effect of the proposed increase in activity on eelgrass.</p> <p>8. Consistent with the HSTT EIS and previous consultations between the Navy and NMFS concerning potential effects of Elevated Causeway pile driving on sea turtles, pile driving would not occur if/when a sea turtle is observed within 180 ft (55 m) from the pile. This assures that sea turtles would not be exposed to waters ensonified (i.e., filled with sound) to ≥ 180 dB⁶. If a sea turtle is observed within this buffer, pile driving activities would be halted and would not resume until the animal has voluntarily left the area.</p> <p>9. Use of any petroleum, cleansers, substrate, or debris that could spill into riparian areas or the Pacific Ocean would be avoided.</p> <p>10. Vehicle access and movement would occur in compliance with Marine Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating</p> | | <p>colony.</p> <p>19. Vehicle operations, inside fenced areas on the edge of the bluff between Aliso and French Creeks (White Beach), are not authorized between March 1 and September 15.</p> <p>20. Upon entering the beach from Camp Del Mar vehicles shall transit in a direct line along a marked corridor bordering the southern edge of the Santa Margarita Endangered Species Management Zone before heading up-coast. During returns, vehicles shall proceed along the same marked corridor. During the breeding season, amphibious tracked vehicles shall not traverse the Santa Margarita Endangered Species Management Zone in excess of a monthly average of 20 traverses per day (one traverse equals one round trip to and from Camp Del Mar).</p> |

⁶ Root mean squared sound pressure level, with dB referenced to one microPascal at 3.28 ft (1 m).

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------|
| | <p>Procedures (MCIWEST-MCBCAMPENO 3500.1).</p> <ol style="list-style-type: none"> 11. All project-related activities would avoid the destruction, and minimize the disturbance of active nests (i.e., nests with eggs or chicks). 12. Training activity and disturbances to vegetation would be avoided to the greatest extent practical. Removal of native vegetation (e.g., riparian or coastal sage scrub vegetation) is not permitted due to the potential presence of federally protected species. 13. Riparian Habitat: <ol style="list-style-type: none"> A. Dust production would be minimized in or adjacent to riparian areas. B. Excessive noise (above 60 dB [A-weighted] equivalent continuous sound over one hour) in or adjacent to riparian areas would be avoided to the maximum extent practical. C. Amphibious tracked vehicles shall traverse the management zones while maintaining both tracks in the water at all times. 14. Wildfires would be prevented by exercising care when driving and by not parking vehicles in grass where catalytic converters could ignite the vegetation. No smoking or disposal of cigarette butts would take place within vegetated areas. 15. Environmental Procedures in MCIWEST-MCBCAMPENO 3500.1: The following Environmental Considerations and Restrictions would be implemented: <ol style="list-style-type: none"> A. Estuarine/Beach Endangered Species Management Zones. In accordance with the Estuarine and Beach Ecosystem Conservation Plan (MCB Camp Pendleton 2012a) and to protect the California least tern, western snowy plover, light-footed clapper rail, and tidewater goby, the restrictions listed below apply when operating within the following areas: all coastal lagoons and estuaries; marshes and salt flats associated with San Mateo Creek, San Onofre Creek, Las Flores Creek, "Hidden Creek" Grid Coordinates 580818, Aliso Creek, French Creek, and Cockleburr Creek watersheds; and the Santa Margarita Endangered Species Management Zone: <ol style="list-style-type: none"> i. Obtain authorization from Environmental | | |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------|
| | <p>Security before entering any lagoon or estuary, marsh, mud/salt flat, or posted nesting area. If any creek and/or lagoon is flowing to the ocean, vehicles may cross the creek only at the ocean's edge. Bivouacking and digging of fighting positions are prohibited in the vicinity of the Estuarine/Beach Endangered Species Management Zones during the period of March 1 to September 15.</p> <p>ii. Between March 1 to September 15, all activities involving smoke, pyrotechnics, loud noises, blowing sand, and large groupings of personnel (14 or more) would remain at least 984 ft (300 m) away from fenced or posted nesting areas. All other activities would be kept at least 16 ft (5 m) from these areas.</p> <p>iii. Foot traffic involving less than 14 personnel would be kept as far away as possible, and approach no closer than 16 ft (5 m) to posted nesting areas. Unit hikes would remain on the hard packed sand, as close to the ocean water edge as possible. When passing posted nesting areas, to the maximum extent practicable, noise would be minimized.</p> <p>iv. Vehicle and equipment operations in the management zones would be kept to a minimum between March 1 to September 15. All vehicles would travel on hard packed sand and would not approach posted nesting areas or lagoons closer than 16 ft (5 m). Speeds would not exceed 25 mph (40 kph). Tracked vehicles would travel as close to the water (upper few inches of water) as possible, year round, in the Santa Margarita Endangered Species Management Zone. Vehicle operations, inside fenced areas on the edge of the bluff between Alison and French Creeks (White Beach), are not</p> | | |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| | <p>authorized.</p> <ul style="list-style-type: none"> v. Boat operations, (including Landing Craft Air Cushions) are not authorized in lagoons and estuaries. Landing Craft Air Cushions shall not enter the management zones between March 1 to September 15, except when entering or exiting seaward; and on return, shall exit the ocean heading directly up to the facility access ramp. <p>B. Coastal California gnatcatcher, least Bell’s vireo, southwestern willow flycatcher, and arroyo toad avoidance measures. For the conservation of these species, the following measures would be followed for training activities in coastal sage scrub and riparian habitats:</p> <ul style="list-style-type: none"> i. Extreme caution beyond that required by the Fire Danger Rating is necessary when using pyrotechnics and when conducting other activities likely to cause a fire. ii. Foot traffic is authorized year round on existing roads, trails, and creek crossings. Consult with Environmental Security before cutting/removing vegetation. iii. Vehicles operating in the vicinity of creeks, rivers, or drainages would use existing roads, trails, and established creek/river crossings. Vehicle traffic on roads in arroyo toad habitat between March 15 and August 31 would be minimized to the maximum extent practicable. iv. Consult with Environmental Security before bivouacking, cutting/removing vegetation, trenching, grading, filling, or conducting engineering operations in or adjacent to creek/river bottom areas. v. Dust produced in or adjacent to creeks and rivers would be minimized to the maximum extent practicable. <p>C. Vernal Pool Avoidance Measures. For the conservation of vernal pools, the following measures would be followed for training exercises in identified</p> | | |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| | <p>vernal pool habitat:</p> <ul style="list-style-type: none"> i. Foot traffic is authorized year round. Digging, including construction of fighting positions is prohibited in vernal pools. ii. Vehicle/equipment operations near known vernal pool areas would be kept on existing roads, year round. Contact Environmental Security before conducting activities involving soil excavation, filling, or grading. iii. Bivouac/Command Post/Field support (e.g., showers, messing, fueling, water purification, etc.) activities would be kept to at least 164 ft (50 m) from identified vernal pools. <p>16. Per the Aviation Operations section of MCIWEST-MCBCAMPENO 3500.1, the following Environmental Considerations and Restrictions would apply:</p> <ul style="list-style-type: none"> A. Endangered Species Nesting Areas. During the period from March 1 through September 15, certain airspace within R-2503A is off-limits to all aircraft to protect the nesting and feeding habitat of endangered bird species (least tern/snowy plover nesting areas). This off-limits airspace has been identified from the surface to 300 ft (91 m) above ground level and 984 ft (300 m) laterally from the following areas: <ul style="list-style-type: none"> i. Beach Section G. Margarita of Blue Beach, inland to the Interstate 5 freeway, and from the bluffs north of the Santa Margarita River to the bluffs south of the river near the 21 Area. ii. Aircraft would not fly below 300 ft (91 m) above ground level over river mouths, riverbeds and streams, estuaries and lagoons other than established landing sites and terrain flight routes. | | |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| <p>Cultural Resources</p> | <p>Cultural sites would be avoided. If potential cultural resources are uncovered, all training would stop immediately and the MCB Camp Pendleton Environmental Security Cultural Resources Management Branch would be notified.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. The locations of all proposed exercise elements would avoid impacting known cultural resources, and would be identified and used in compliance with MCIWEST-MCBCAMPENO 3500.1. 2. All personnel would stay on established dirt roads, paths, and routes; no activities or personnel would be allowed within the brush areas adjacent to dirt roads. No ground disturbing activities would be permitted inland near vegetation or along dirt roads that would be used as ingress routes or paths. 3. Exercise planners and all participants shall be briefed on access to range and training areas before the exercise taking place. This includes using existing dirt roads per MCIWEST-MCBCAMPENO 3500.1 and in accordance with the Environmental Operations Map. As per MCIWEST-MCBCAMPENO 3500.1 the following shall remain in effect: <ol style="list-style-type: none"> A. Foot traffic is authorized, year round. Digging, including construction of fighting positions, is prohibited at known archaeological sites. B. Vehicle/equipment operations shall be kept on existing roads through known archaeological sites, year round. Contact Environmental Security before conducting activities involving mechanical soil excavation, filling, or grading in the vicinity of known archaeological sites. C. Bivouac/command and post/field support activities (e.g., showers, messing, fueling, water purification, etc.) shall be kept at least 164 ft (50 m) from identified archaeological sites. D. When conducting operations, if archaeological materials are discovered on the ground or below soil surfaces: | <p>Impacts would be the same as those presented under the No Action Alternative as cultural sites would continue to be avoided.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be the same as those presented under the No Action Alternative as cultural sites would continue to be avoided.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| | <ul style="list-style-type: none"> i. Avoid disturbing any archaeological materials; ii. Notify Environmental Security as soon as possible (with the exact grid coordinates, if possible, and site description); and iii. Do not remove materials from the area. <p>E. If human bone material (to include fragments) is discovered during any operation, the area would be immediately evacuated, leaving the remains intact. Notify Range Control (LONGRIFLE) as soon as possible.</p> <p>4. In the event that archaeological materials (e.g., shell, wood, bone, or stone artifacts) are found or suspected during training, training would be halted in the area of discovery and the MCB Camp Pendleton Environmental Security Cultural Resources Management Branch would be notified at (760-725-9738), as soon as practicable (but no longer than 24 hours after the discovery). Training at the discovery site would not proceed until the MCB Camp Pendleton Archaeologist has the opportunity to evaluate the find and gives permission to resume training exercises.</p> <p>5. Bivouac/command and post/field support activities or ground disturbing activities are authorized in Sierra 1. The Sierra Training Area now includes Sierra 4, which was previously identified as a Natural Resources buffer area and not subject to training activities. The conditions for use of the Sierra Training Area include the following:</p> <ul style="list-style-type: none"> A. Adherence to the Programmatic Agreement for the MV-22 EA, including a buffer of 350 ft (107 m) around an archaeological site. B. The Non-Impact Area boundary encompassing the existing Treated Wastewater Percolation Ponds be expanded to include CA-SDI-16283 in its entirety. C. MCIWEST-MCBCAMPENO 3500.1 remains in effect as ground-disturbing activities and vehicular use would be restricted during training within CA-SDI-13324 and CA-SDI-13325. D. A monitoring and discovery plan would be required and approved by the Cultural Resources Management Branch. E. All ground-disturbing activities within Sierra 1 below | | |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| | <p>19.7 inches (50 centimeters) would be monitored by a professional archaeologist and a Native American monitor (both approved by the Cultural Resources Management Branch).</p> <p>F. A monitoring report would be submitted to the CA SHPO upon completion of training activities.</p> <p>G. Sites CA-SDI-13324, CA-SDI-13325 and CA-SDI-16282 would be included in the on-going conditions assessment monitoring for sites within training areas.</p> | | |
| <p>Land Use</p> | <p>Amphibious training exercises at Green Beach and within the State Lease Areas would necessitate the temporary closure of coastal elements of the State Lease Areas (i.e., Trestles Beach, Surf Beach and San Onofre Bluffs, and associated trails) and the Marine Corps Community Services San Onofre Beach facility, resulting in the temporary displacement of aquatic recreation in these areas. Potential course alteration of recreational boats. Closure of the San Mateo Campground for up to 15 consecutive days each calendar year. Temporary closure of portions of the bike path passing through MCB Camp Pendleton.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Before each exercise occurring within the State Lease Areas, the California Department of Parks and Recreation would receive notice. 2. Immediately before an amphibious training exercise, MCB Camp Pendleton personnel would perform a safety and security sweep to ensure the training area is clear of all non-participating persons. 3. Exercise proponents would coordinate (via the California Department of Parks and Recreation in advance to minimize impacts to organized surfing events that are regularly held at Trestles Beach. 4. When planning information supports doing so, exercise proponents would strive to notify the California Department of Parks and Recreation at least six months' in advance of an exercise that would require the use (and therefore temporary closure) of the San Mateo Campground. | <p>The proposed increase in annual training tempo would result in an incremental increase in some of the impacts that currently occur under the No Action Alternative. Increase in temporary closures of certain segments of the State Lease Areas. These closures would be short-term, lasting only for the duration of the beach portion of the training activities. The bike path would be subject to temporary closure more often while training activities use/cross the bike path. Alternative 1 would increase the frequency and duration of San Mateo Campground closures. Campground closures could occur in support of one, or more than one exercise each calendar year, but are not anticipated to result in a cumulative closure of more than 30 days each calendar year.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| | 5. Bike path closure notifications would be posted in advance of closures. 6. In advance of amphibious training exercises, a Notice to Mariners would be released. | | |
| Air Quality | <p>No net increase in emissions.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Visible Emissions and Nuisance: <ol style="list-style-type: none"> A. Exercise participants shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period aggregating more than three minutes in any period of 60 consecutive minutes, which is darker in shade than Number 1 on the Ringelmann Chart (i.e., dark smoke). B. Exercise participants shall not discharge any quantity of air contaminant that may cause injury, detriment, or nuisance pursuant to San Diego Air Pollution Control District Rules 50 and 51; and for the 64 Area (South Coast Air Quality Management District Rules 401 and 402) mainly over the Base's property line (e.g., freeways, public roads, adjacent neighborhoods, ocean). 2. Temporary Power Supply Equipment: <ol style="list-style-type: none"> A. The unit would report all generators (regardless of size) to the MCB Camp Pendleton Environmental Security Air Quality Section (760-725-9756) for inclusion into MCB Camp Pendleton's Annual Tactical Support Equipment Inventory or into the South Coast Air Quality Management District's Annual Emission Inventory Report. B. The unit shall provide power generation equipment (i.e., generators) for supplemental or back-up power requirements. Base-owned, permitted generators shall not be utilized to provide supplemental/back-up power during amphibious training exercises. | <p>Under Alternative 1, emissions of criteria pollutants would increase by between 19% and 23%, as compared to the No Action Alternative. The increase in emissions would be below <i>de minimis</i> levels.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be the same as presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Transportation and Circulation</p> | <p>Short-term, localized and minor effects due to the temporary closure of portions of Old Highway 101 and Cristianitos Road. Possible impact on Interstate 5 traffic flow if passing motorists pause to observe exercise elements crossing Interstate 5 via the Basilone Road and/or Cristianitos Road overpasses.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> 1. Before commencing any training exercise that would involve exercise elements crossing over Interstate 5, MCB Camp Pendleton would issue a traffic advisory to Caltrans District 11 and the local media alerting motorists to the exercise, emphasizing the temporary presence of exercise elements on Interstate 5 freeway overpasses and the associated short-term impact to transportation. | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. Approximately 20 vehicles would use major regional transportation corridors up to four times per year.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative and as follows:</p> <ol style="list-style-type: none"> 2. To minimize potential traffic congestion resulting from the transport of personnel and materiel between Silver Strand Training Complex and MCB Camp Pendleton, road convoys would be broken into smaller elements, consisting of 3-5 vehicles. Convoy elements would depart at 15 to 30 minute intervals to minimize potential effects on traffic flow. Subject to operational requirements, convoy elements would be scheduled to avoid travel during peak commuting hours (i.e., 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). | <p>Impacts would be similar to those presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Table 3.0-1. Summary of Environmental Consequences, Permits, and Mitigation Measures

| Resource Area | No Action Alternative | Alternative 1 | Alternative 2 (Preferred Alternative) |
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| Socioeconomics | <p>Maximum potential State Parks revenue loss of approximately \$100,000 per year due to temporary closure of San Mateo Campground. Minor loss in revenue to local businesses due to temporary closure of beaches and in-water recreation areas. Minor beneficial impact due to temporary employment of civilian contractors.</p> <p>Mitigation Measures: No additional mitigation measures have been identified for socioeconomics as the previously identified mitigation measures for land use would also minimize impacts to socioeconomic resources.</p> | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative. The temporary closure of the San Mateo Campground for approximately 30 cumulative days each calendar year would result in a maximum potential State Parks revenue loss of approximately \$200,000 per calendar year.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |
| Hazardous Materials and Waste | <p>Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would have the potential to enter soil and surface waters.</p> <p>Mitigation Measures: The following actions have been, and will continue to be integrated into each amphibious training exercise:</p> <ol style="list-style-type: none"> To minimize the potential for spills during at-sea refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C, <i>Environmental Protection Program</i> and planning procedures and instructions such as those outlined in 33 CFR 156.150. Installation Restoration sites would be avoided during training exercises. | <p>The proposed increase in annual training tempo would result in an incremental increase in the impacts that currently occur under the No Action Alternative.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> | <p>Impacts would be similar to those presented for Alternative 1. In addition, increased geographic scope of amphibious training would expand the probability for spills over a larger area.</p> <p>Mitigation Measures: Avoidance and minimization measures would be the same as identified for the No Action Alternative.</p> |

Notes: % = percent; BMP = Best Management Practice; BO = Biological Opinion; CCC = California Coastal Commission; CCND = Coastal Consistency Negative Determination; dB = decibels; EIS = Environmental Impact Statement; ft = foot/feet; ha = hectare(s); HSTT = Hawaii-Southern California Training and Testing Activities; kph = kilometers per hour; LOA = Letter of Authorization; m = meter(s); MCIWEST-MCBCAMPENO = Marine Corps Installations West-Marine Corps Base Camp Pendleton Order; mph = miles per hour; NMFS = National Marine Fisheries Service; RWQCB = Regional Water Quality Control Board; SHPO = State Historic Preservation Office; USACE = U.S. Army Corps of Engineers.

3.1 GEOLOGICAL RESOURCES

1 3.1.1 DEFINITION OF RESOURCE

2 Geological resources are generally defined as the topography, geology, and soils within a given area.
 3 Topography refers to elevation, slope, aspect, and surface features. Geology includes bedrock materials,
 4 mineral deposits, and fossils. Soil refers to unconsolidated earthen materials overlying bedrock or other
 5 parent material. This geological resources section also addresses marine sediments. For the purposes of
 6 this analysis, marine sediments are generally defined as any deposit of insoluble material, primarily rock
 7 and soil particles, transported from the land to the ocean by wind and surface water.

8 3.1.2 AFFECTED ENVIRONMENT

9 3.1.2.1 Marine Environment

10 Red, Gold, Green, and White Beaches

11 The MCB Camp Pendleton shoreline consists of coastal beaches, stony land, terrace escarpments, and
 12 riverwash soil types (Table 3.1-1). While these soil types lack an erodibility designation as defined by the
 13 U.S. Department of Agriculture (1973), given that they are predominantly beach sand they are susceptible
 14 to wind and water/wave erosion processes.

Table 3.1-1. Project Area Soil Types by Training Location

| Soil Description | Erodibility | Training Location | | | | |
|----------------------------------------------|-----------------|-------------------|------|-------|-------|--------------------|
| | | Red | Gold | Green | White | Del Mar Boat Basin |
| Carlsbad gravelly loamy sand | Slight–Moderate | | | | | X |
| Coastal Beaches | N/A | X | X | X | X | X |
| Diablo Clay | Moderate–High | X | | | | |
| Elder shaly fine sandy loam | Slight–Moderate | X | | | | |
| Gaviota fine sandy loam | Moderate–High | | | X | | X |
| Grangeville fine sandy loam | Slight | | | X | | |
| Hambright gravelly clay loam | High–Very High | X | | | | |
| Huerhuero loam | Slight–Moderate | X | X | | | |
| Las Flores loamy fine sand, 15 to 30% slopes | Moderate | | | X | | |
| Loamy alluvial land | Severe | X | | | | |
| Marina loamy coarse sand | Slight–Moderate | | | | | X |
| Riverwash | N/A | | | X | | |
| Salinas clay | Slight | X | X | X | | |
| Steep gullied land | Very High | X | | | | |
| Stony land | N/A | | | X | | |
| Terrace escarpments | N/A | X | X | | | |
| Tidal flats | N/A | X | | | | X |
| Tujunga sand | Slight | | | X | | X |
| Visalia sandy loam | Slight | X | | X | | X |

Note: N/A = The U.S. Department of Agriculture has not assigned an erodibility measure to the soil type.

Source: U.S. Department of Agriculture 1973.

1 The project area beaches are in a dynamic system, often exposed to high surf and winds. The high-energy
2 environment results in the temporary suspension of sediment (sand) and the longshore and offshore
3 movement of sand. The beach size, or width, varies in response to seasonal conditions (i.e., the beach
4 width is typically narrower in the winter and wider in the summer). The beaches in the project area are
5 part of the Oceanside Littoral Cell, which extends from Dana Point to La Jolla. Coastal sand movement
6 within this cell includes both longshore and offshore seasonal migration and longshore transport. Major
7 fluvial inputs of sand in this littoral cell include the Santa Margarita River and the San Luis Rey River.
8 Sand transport into the cell by rivers is intermittent, depending on rain amounts and duration. Sediment
9 contributions by these rivers have been reduced from pre-development levels by upstream damming (San
10 Diego County Water Authority 2009).

11 Red and Gold beaches are sandy throughout the intertidal and shallow subtidal zones. Green Beach and
12 the State Lease Area beaches consist of a coarse-sand intertidal beach that grades into large gravel and
13 cobble at the lower edges. White Beach is sandy throughout the intertidal and shallow subtidal (Naval
14 Facilities Engineering Command [NAVFAC] NAVFAC Atlantic 2010a). The beaches grade to a soft-
15 bottomed sea floor that gently slopes with increasing distance offshore to a depth of approximately 60 ft
16 (18.3 m) at 10,000 ft (3,048 m) offshore. The sea floor is incised with basins and ridges. The continental
17 shelf, which extends approximately 4.5 miles (7.2 km) offshore, is cut by numerous submarine canyons,
18 which facilitate the transport of water between deep, offshore areas and the shallow nearshore
19 environment. Offshore portions of MCB Camp Pendleton have been mapped as mostly unconsolidated
20 and poorly consolidated Pleistocene sand, silt, and clay deposits (San Diego County Water Authority
21 2009).

22 **Del Mar Boat Basin**

23 The Del Mar Boat Basin is a shallow, steep-sided, and relatively flat basin with depths ranging from 16 to
24 28 ft (5 to 8 m). The channel connecting the Del Mar Boat Basin to the ocean is generally 16 to 20 ft (5 to
25 6 m) deep and protected by a stone breakwater (NAVFAC Atlantic 2010a).

26 **3.1.2.2 Terrestrial Environment**

27 **Red, Gold, Green, and White Beaches**

28 Areas immediately along the shoreline contain low, wave-cut terraces that have distinct cliffs or
29 escarpments along the seaward edge. Elevation ranges from sea level to approximately 145 ft (44 m) near
30 Pulgas Canyon. The marine terraces slope uniformly to the southwest at inclinations of 5 percent or less.
31 MCB Camp Pendleton contains diverse geological units, ranging from the oldest metavolcanic rocks and
32 granite of the Southern California batholith, to the stream- or ocean-cut terrace sequences and recent
33 alluvium (MCB Camp Pendleton 2012a). The coastal marine terraces are composed mostly of poorly
34 consolidated marine sediments. Consequently, several soil types within the terrestrial portions of the
35 project area have high to severe erodibility (refer to Table 3.1-1) (U.S. Department of Agriculture 1973).
36 There are no unique geological features within the project area.

37 **Del Mar Boat Basin**

38 The area upland of the Del Mar Boat Basin is primarily flat with a slight elevation rise heading east
39 towards the Oceanside Rail Yard. Most of the area surrounding the Del Mar Boat Basin is composed of
40 developed land that has been disturbed and modified, to include imported fill. Areas of native soils are
41 found around the Oceanside Rail Yard and east of Basin Road. Many of these soils have slight erodibility,
42 with the exception of Gaviota fine sand and loam, and Marina loamy coarse sand at the Oceanside Rail
43 Yard, which have moderate to high erodibility (refer to Table 3.1-1).

1 **3.1.3 ENVIRONMENTAL CONSEQUENCES**

2 **3.1.3.1 No Action Alternative**

3 **Marine Environment**

4 Under the No Action Alternative, the construction of the Elevated Causeway and TRIDENT piers, and
5 vehicle/cargo offloading would continue to cause localized sand suspension in the surf zone. The
6 suspensions would be temporary and would be consistent with sediment suspension generated by regular
7 wave and wind energy in the surf zone. Ocean sediment transport systems would deposit sediment in
8 disturbed areas; thus, no long-term or broad impacts to bathymetry or sediment movement would occur.

9 Anchors associated with static surface vessels would continue to cause temporary and minor disturbances
10 to marine sediments. For liquid transfer, a Single Anchor Leg Mooring would be used to secure the
11 Offshore Petroleum Discharge System conduit to the ocean floor. Because divers would select the Single
12 Anchor Leg Mooring resting site to avoid rocks, kelp beds, and other obstructions or environmentally
13 sensitive areas, limited disturbance to the sea floor would occur. The Single Anchor Leg Mooring hose
14 would lie upon the sea floor sediments, temporarily impacting sediments in a localized area; however,
15 these impacts would be minor to marine sediments due to the relatively small diameter (approximately 6
16 inches) of the hose. Depressions in the sea floor formed from anchors or the Single Anchor Leg Mooring
17 hose would continue to be filled in by sediments transported by currents or from the settling of sediments
18 through the water column. The salt water used in the Offshore Petroleum Discharge System or
19 Amphibious Bulk Liquid Transfer System would continue to be gradually discharged into the Pacific
20 Ocean away from the shoreline, resulting in negligible impacts to marine sediments.

21 Tracked vehicles and equipment would continue to be used to move sand and build logistic systems (e.g.,
22 the Beach Termination Unit of the Offshore Petroleum Discharge System) on the beach. Where training
23 exercises temporarily alter natural beach contours, sand would continue to be replaced to fill in the holes
24 at the conclusion of the activity. Mobility matting would be utilized on the beach to stabilize soils and
25 facilitate vehicles moving over sand and soft soil. Through implementation in accordance with anticipated
26 USACE and San Diego Regional Water Quality Control Board (RWQCB) permits, use of the Tactical
27 Water Purification System would continue to result in minor, focused, and temporary impacts to beach
28 sediments where the discharge is pumped into beach percolation pits. Any changes to the beach/surf zone
29 topography would be smoothed out by on-going coastal processes such as wave and current activity.
30 Coastal sand movement processes would not be impacted.

31 The anchoring of vessels and placement of the ADMIN Pier would continue to cause temporary and
32 minor disturbances of the Del Mar Boat Basin sediments. These disturbances would be consistent with
33 on-going impacts to sediments in the Del Mar Boat Basin, which, by its function as a boat basin, is
34 subject to frequent disturbance. At the conclusion of the exercise, these localized impacts (i.e.,
35 depressions from anchors) within the Del Mar Boat Basin and ocean floor would be filled in by currents
36 and tidal activity over time.

37 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
38 no significant impacts to marine sediments with the continued implementation of the No Action
39 Alternative.

40 **Terrestrial Environment**

41 Under the No Action Alternative, terrestrial components of amphibious training exercises would continue
42 to use established training areas. Surface soils within the established training areas are regularly disturbed
43 but are managed to support these activities and minimize the potential for the offsite transport of soils.

1 Foot and vehicle traffic on these surfaces would continue to increase the potential for wind and water
2 erosion of soils by reducing vegetative cover and breaking up the soil crust. Training activities could
3 loosen and displace moderate-severe erodibility soil/sediments on unpaved portions of the training
4 exercise areas making them more susceptible to erosion; however, the continued implementation of
5 mitigation measures would reduce the potential for these temporary activities to increase erosion. For
6 example, a watering truck would continue to be utilized to minimize dust from grading activities and
7 vehicular travel and percolation pits would be refilled and leveled at the end of each exercise. No
8 permanent alteration of topographic features would result from the continuation of training exercises.

9 If amphibious training exercises result in the grading of more than 1 acre (0.4 ha), coverage under the
10 General Permit for Discharges of Stormwater Associated with Construction Activity (Construction
11 General Permit Order 2009-0009-DWQ) would apply. The Construction General Permit requires the
12 development and implementation of a Stormwater Pollution Prevention Plan, which includes site-specific
13 Best Management Practices (BMPs) to minimize erosion, sedimentation, and stormwater runoff. Potential
14 BMPs include placing silt fencing or straw wattles.

15 Under the No Action Alternative, vehicle staging areas on upland portions of the Del Mar Boat Basin
16 would continue to be located on paved areas, with the exception of the beach area at the end of Basin
17 Road, just inside the harbor entrance, and sections of the Oceanside Rail Yard.

18 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
19 no significant impacts to terrestrial geological resources with the continued implementation of the No
20 Action Alternative.

21 **3.1.3.2 Alternative 1**

22 Under Alternative 1, the proposed increase in annual training tempo would result in an incremental
23 increase in the impacts that currently occur under the No Action Alternative. While the activities would
24 generally be the same as presented for the No Action Alternative, the frequency of some activities would
25 increase. As a result, there would be an incremental increase in beach and marine sediment disturbance.
26 While there would be an impact greater than presented for the No Action Alternative, because the activity
27 types would be of the same nature, and existing oceanographic processes would continue to occur, the
28 impacts would not result in long-term or broad impacts to bathymetry or sediment movement. The
29 proposed addition of JLOTS, MPF, and FEX activities off of and on Green Beach and within the State
30 Lease Areas would result in impacts consistent with existing activities at Red and Gold Beaches, as
31 analyzed and presented under the No Action Alternative. The existing cobble substrate within the Green
32 Beach area would not be affected as this substrate is generally stable (as compared to sand-based beaches)
33 and would thus not be impacted by the proposed activity in this area. On a broader scale, the existing
34 littoral cell coastal sand movement processes would not be impacted.

35 Under Alternative 1, the increase in upland activities would result in greater disturbance of surface soils,
36 and could accelerate erosion and offsite movement of soils, as compared to the No Action Alternative.
37 However, this impact would continue to be minor and be limited to the designated, existing training areas.
38 The implementation of mitigation measures would reduce the potential for these temporary activities to
39 increase erosion or result in the offsite movement of soils.

40 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
41 no significant impacts to marine sediments and terrestrial geological resources from implementation of
42 Alternative 1.

1 **3.1.3.3 Alternative 2**

2 Under Alternative 2, the increased geographic scope of amphibious training would increase the potential
3 for marine sediment disturbance and erosion over a larger area. However, with the use of White Beach,
4 impacts to geological resources at other beaches could be reduced, as there would be the potential for the
5 exercise to occur over a larger area (i.e., more beaches used would result in overall lower density impacts
6 across the project area). These potential impacts would be similar to those presented for Alternative 1 and
7 would be temporary and minor. Vehicle ingress from the White Beach landing area would use existing
8 roads. The increase in amphibious training activity off of and on White Beach would result in impacts
9 consistent with existing activities at Red and Gold Beaches, as analyzed under the No Action Alternative.
10 The use of White Beach would not result in long-term or broad impacts to bathymetry or sediment
11 movement.

12 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
13 no significant impacts to marine sediments and terrestrial geological resources from implementation of
14 Alternative 2.

3.2 WATER RESOURCES

15 **3.2.1 DEFINITION OF RESOURCE**

16 Water resources discussed in this section include oceanography, hydrology, water quality, and
17 groundwater. For this analysis, oceanography is defined as the physical properties of the sea. Hydrology
18 is the science that deals with global water, its properties, circulation, and distribution, on and under the
19 surface of the earth and in the atmosphere, from the moment of precipitation until water returns to the
20 atmosphere through evapotranspiration or flows to the ocean. Water quality describes the chemical and
21 physical composition of water as affected by natural conditions and human activities. For the purposes of
22 this analysis, freshwater quality is evaluated with respect to possible releases of hazardous materials and
23 erosion-induced sedimentation. Groundwater refers to water held underground in the soil or in pores and
24 crevices in rock.

25 **3.2.2 AFFECTED ENVIRONMENT**

26 **3.2.2.1 Marine Environment**

27 Amphibious training exercises at MCB Camp Pendleton occur in the Southern California Bight portion of
28 the Pacific Ocean. Currents in the nearshore Southern California Bight area are driven by many factors,
29 including wind, weather, tides, local topography, water density, and offshore oceanic currents. Tides
30 along the coast are mixed semi-diurnal, with two unequal highs and two unequal lows during an
31 approximately 25-hour period (San Diego County Water Authority 2009).

32 Overall, marine water quality along the San Diego County coastline is considered excellent, with 99
33 percent of monitored locations receiving a good to excellent water quality rating (Heal the Bay 2013).
34 The relatively low level of development in the MCB Camp Pendleton watersheds is believed to contribute
35 to relatively high marine water quality off of MCB Camp Pendleton.

36 All ship-to-shore simulated fuel (potable water) transfers/discharges are currently regulated under the
37 Navy's existing San Diego RWQCB Order Number R9-2010-0003 (National Pollutant Discharge
38 Elimination System Permit Number CAG679001), Hydrostatic/Potable Water Discharge Permit.
39 Amphibious training exercises are obligated to comply with the waste discharge disposal requirements in
40 this permit.

41

1 Prior amphibious training activities on the beaches that resulted in the fill or discharge to waters of the
2 U.S. were permitted by the U.S. Army Corps of Engineers (USACE) under a permit which expired on
3 August 31, 2013. As part of this EA, CPF is currently applying for a new USACE permit for future
4 amphibious training exercises analyzed in this EA.

5 **3.2.2.2 Terrestrial Environment**

6 MCB Camp Pendleton has seven distinct watersheds (Figure 3.2-1), consisting of coastal plains, coastal
7 valleys, and mountainous areas. Proposed amphibious training exercises would occur within six
8 watersheds: Coastal Drainage, Las Flores, Aliso, San Mateo, San Onofre, and the Santa Margarita. Most
9 of the surface water drainages within the project area are ephemeral and only flow following successive,
10 major rain events. However, the Santa Margarita River, San Onofre Creek, and San Mateo Creek
11 typically have semi-permanent segments to open water, particularly in the lower reaches. As project area
12 streams reach the sea, sloughs or estuarine lagoons form due to sand bars or narrow tidal barriers. These
13 barriers impound low stream flows, but can be breached during high-flows caused by storm events and
14 normal tidal fluctuation (MCB Camp Pendleton 2012a).

15 Upstream users greatly affect the water quality of surface waters, as MCB Camp Pendleton is the last
16 water user on the extensive Santa Margarita River system and San Mateo Creek. Santa Margarita River
17 nutrient levels, particularly nitrogen, have increased in recent years due to intensive agricultural use of
18 fertilizers in the upper watersheds. In addition, dramatic expansion of residential, commercial, and
19 industrial development during the past decade in the upper part of this drainage has produced more urban
20 runoff and wastewater discharge (MCB Camp Pendleton 2012a).

21 MCB Camp Pendleton has four groundwater basins that correspond to, and are connected with, the four
22 major surface drainage basins (Santa Margarita, San Onofre, Las Flores and San Mateo). Overall,
23 localized water tables can be expected at similar elevations to those of observed nearby flowing streams,
24 or below the elevations of dry stream channels. The alluvial valleys formed by the downstream portions
25 of all four major creeks contain the principal source of water for MCB Camp Pendleton (MCB Camp
26 Pendleton 2012a).

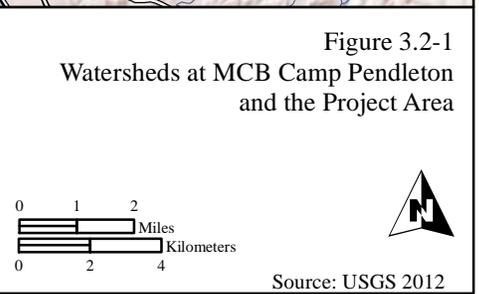
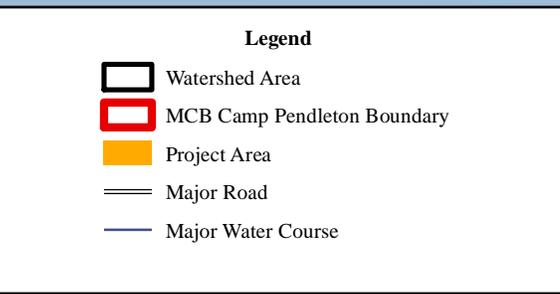
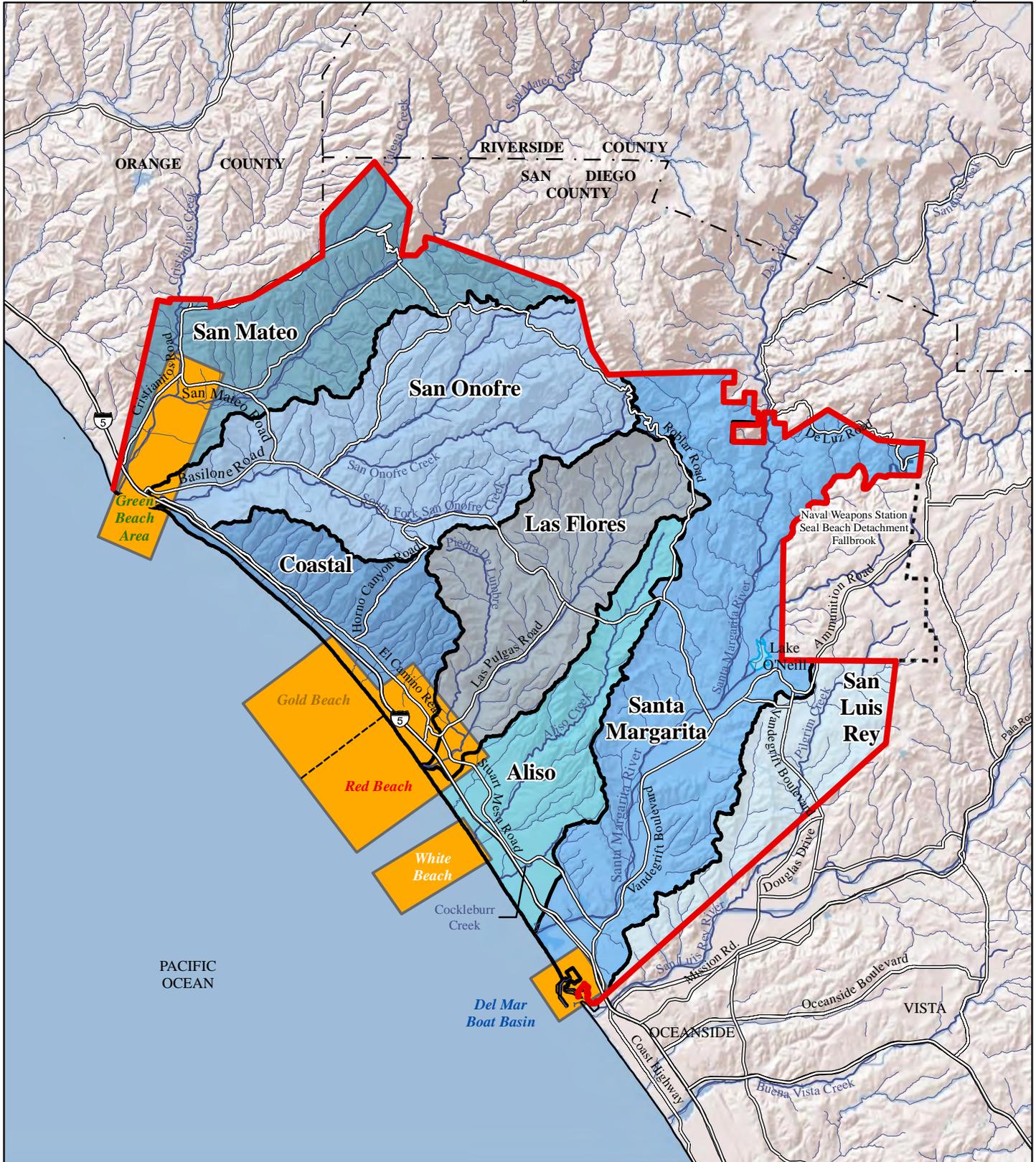
27 **3.2.3 ENVIRONMENTAL CONSEQUENCES**

28 **3.2.3.1 No Action Alternative**

29 **Marine Environment**

30 Under the No Action Alternative, suspended sediment and localized increases in turbidity generated from
31 Elevated Causeway/TRIDENT pier construction/removal, beach activities, and ship anchors would
32 continue to be temporary and minor, and would be consistent with suspension created from normal wind
33 and wave action. Impacts to marine water quality would be localized and temporary.

34 Under the No Action Alternative, Tactical Water Purification System activities would continue to intake
35 salt water and then discharge the resulting brine into a percolation pit excavated in the sand above the
36 high tide line. The brine would then percolate into the underlying sand and be diluted upon contact with
37 ocean water. The salt water used in the Offshore Petroleum Discharge System or Amphibious Bulk
38 Liquid Transfer System would continue to be gradually discharged into the Pacific Ocean away from the
39 shoreline.



1 Amphibious training activities on the beaches that would continue to result in the fill or discharge to
2 waters of the U.S. would be permitted under the new Section 10 permit and Section 404 permit CPF will
3 obtain from the USACE (refer to Table 1-2). In addition, in compliance with Section 401 of the Clean
4 Water Act, CPF will obtain a Water Quality Certification from the San Diego RWQCB (refer to Table 1-
5 2). The exercise proponents would be responsible for ensuring that the exercises are carried out in
6 accordance with the provisions of these permits.

7 The Navy strives to minimize the potential for spills. However, because of the number of potential
8 sources and the stresses placed on equipment during training, small leaks or spills may occasionally occur
9 due to equipment failure (e.g., burst hydraulic line) or human error. Thus, under the No Action
10 Alternative, minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants,
11 would continue to have the potential to enter marine waters during amphibious training exercises.
12 Personnel would immediately contain and clean-up any hazardous material spill using spill control
13 equipment and supplies readily available on vessel and military equipment. In spite of best spill
14 prevention measures and if necessary, clean-up activities, should small quantities of these substances still
15 be released into the environment, they are not believed to impact water marine quality.

16 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
17 no significant impacts to marine water resources with the continued implementation of the No Action
18 Alternative.

19 **Terrestrial Environment**

20 Under the No Action Alternative, graywater generated from shower and laundry facilities would continue
21 to be collected, stored, and disposed of via percolation pits and/or commercial tanker (refer to Photo 2-
22 14). Personnel would avoid digging graywater percolation pits in locations that are known to contain
23 contaminated soils. Graywater percolation pit discharge would not come into contact with any work
24 materials that could cause the migration of potential contaminants to surface or ground waters. There
25 would be no permanent increase in impervious surfaces; temporary increases in stormwater associated
26 with the temporary increase in impervious surfaces during training exercises would be moderated through
27 mitigation measures.

28 Under the No Action Alternative, all maintenance and refueling activities would continue to be conducted
29 in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013a). Any hazardous
30 material spill associated with vehicle maintenance would be immediately cleaned up in accordance with
31 all applicable federal, military, state, and local laws and regulations to limit the possibility of surface or
32 groundwater contamination. Any equipment or cargo in need of a wash down would continue to use the
33 wash racks adjacent to the Del Mar Boat Basin where runoff would continue to be collected and treated
34 before appropriate disposal. Vehicles would continue to be refueled in established and designated
35 refueling areas at MCB Camp Pendleton; vehicles would continue to not be refueled on the beach. In
36 addition, the refueling and maintenance of equipment would continue to occur at least 100 ft (30 m) away
37 from surface water drainages.

38 Under the No Action Alternative, the continued implementation of BMPs as identified in the mitigation
39 measures and if applicable, the provisions of the Construction General Permit, would continue to limit
40 impacts to water resources from erosion of soil associated with vehicular and foot traffic along portions of
41 the existing inland training areas. Training exercises would be limited to the near surface region and
42 would not reach existing groundwater basins; thus, continuation of the No Action Alternative would not
43 affect the quantity or quality of groundwater resources.

1 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
2 no significant impacts to terrestrial water resources with the continued implementation of the No Action
3 Alternative.

4 **3.2.3.2 Alternative 1**

5 Under Alternative 1, lighterage craft refueling activities would be conducted in accordance with the Spill
6 Prevention Control and Countermeasure Plan (Navy 2013a), the HSTT EIS (Navy 2013b), and Navy spill
7 prevention protocols. The Navy uses special care to minimize the potential for spills during at-sea
8 refueling operations. The Navy has a system in place with checks to ensure at-sea refueling operations are
9 conducted in a proper manner. To minimize the potential for spills of JP5 (the fuel used at sea) during at-
10 sea refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C,
11 *Environmental Protection Program* and planning procedures and instructions such as those outlined in 33
12 CFR 156.150.

13 The proposed increase in annual training tempo would result in an incremental increase in suspended
14 sediments affecting marine water quality. Impacts to marine water quality, namely turbidity, would
15 continue to be localized and temporary as existing wave action, currents, and sediment deposition activity
16 would continue to eliminate these impacts over time. Under Alternative 1, the proposed increase in
17 JLOTS, MPF, and FEX activities off of and on Green Beach and within the State Lease Areas would
18 result in impacts consistent with existing activities at Red and Gold Beaches, as analyzed and presented
19 under the No Action Alternative.

20 The increase in amphibious training activity would result in an increase in potential for fuel, oil,
21 lubricants to be released into the marine environment. Existing procedures and instructions would be
22 followed, thus reducing the potential for a spill to occur. If a spill were to occur, the spill would be
23 immediately cleaned up by onsite personnel using readily available supplies and equipment.

24 The increase in annual exercise tempo would result in an increased potential for impacts to terrestrial
25 water resources. Training activities would continue to occur in established training areas with existing
26 measures in place to minimize impacts to water resources; the increase would not result in new activity or
27 new impacts, just an increase in the impacts as presented under the No Action Alternative. The impacts
28 would continue to be minimized through the implementation of BMPs as identified in the mitigation
29 measures and if applicable, the provisions of the Construction General Permit. Training exercises would
30 be limited to the near surface region and would not reach existing groundwater basins.

31 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
32 no significant impacts to water resources from implementation of Alternative 1.

33 **3.2.3.3 Alternative 2**

34 Under Alternative 2, the increased geographic scope of amphibious training would increase the potential
35 for sediment suspension, turbidity, sedimentation, and spills. These potential impacts would be similar to
36 those presented for Alternative 1. Although JLOTS, MPF, FEX, and LSE amphibious training exercises
37 currently do not occur at White Beach, Landing Craft Air Cushion training currently takes place in this
38 area. The on-going Landing Craft Air Cushion training is similar to the Proposed Action in that multiple
39 amphibious craft cross through the surf zone and up on to the beach. Therefore, implementation of
40 Alternative 2 would be expected to result in incremental and localized increases in sediment suspension,
41 turbidity, sedimentation, and spills at White Beach, as presented for Red and Gold beaches under the No
42 Action Alternative. However, from a regional perspective, Alternative 2's impacts would be dispersed
43 over a larger area, resulting in overall lower density impacts to water resources. Vehicle ingress from the

1 White Beach landing area would use existing roads, thus not increasing the potential for additional
2 impacts to water resources in this area. The increase in amphibious training activity off of and on White
3 Beach would result in impacts consistent with existing activities at Red and Gold Beaches, as analyzed
4 under the No Action Alternative.

5 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
6 no significant impacts to water resources from implementation of Alternative 2.

3.3 BIOLOGICAL RESOURCES

3.3.1 DEFINITION OF RESOURCE

8 Biological resources include plants and animals and the habitats in which they occur. A distinction is
9 drawn between marine biological resources, which occur for the most part below the high tide line, and
10 terrestrial biological resources, which occur for the most part above the high tide line. Species and
11 habitats of the riparian, estuarine ecosystems, and all birds are discussed in the terrestrial subsection.
12 Biological resources are further subdivided into “Habitats, Communities, and Wildlife” and “Special
13 Status Species.” Special consideration is given to bird species protected under the Migratory Bird Treaty
14 Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special Status
15 Species include federally listed threatened and endangered species and marine mammals. Marine
16 mammals are discussed under special status species as all marine mammals are protected under the
17 Marine Mammal Protection Act. Essential Fish Habitat (EFH) is discussed below.

3.3.2 AFFECTED ENVIRONMENT

3.3.2.1 Marine Environment

20 The information in this section references two recently completed surveys of the marine biological
21 resources of MCB Camp Pendleton: a Nearshore Habitat Assessment (NAVFAC Atlantic 2010a) and
22 Baseline Study (NAVFAC Atlantic 2010b). These studies characterized the nearshore marine
23 environment along MCB Camp Pendleton’s coastline from the high tide line to approximately the
24 midpoint of the middle shelf, 215-ft (65-m) depth contour, approximately 3.1 miles (5 km) offshore. The
25 Habitat Assessment provided detailed mapping of nearshore bathymetry and substrate, along with the
26 characterization of kelp bed habitats. The Baseline Study provided a comprehensive assessment of the
27 biological resources and species communities using otter trawl and beach seines surveys along the coast
28 and the Del Mar Boat Basin, scuba diver surveys of riprap and eelgrass (*Zostera marina*) beds in the Del
29 Mar Boat Basin, phytoplankton sampling, and a parasitology study of fishes in the Del Mar Boat Basin.

30 The nearshore marine waters of MCB Camp Pendleton constitute EFH for managed fisheries that include
31 Pacific Groundfish, Coastal Pelagics, and Highly Migratory Species. In compliance with the Magnuson-
32 Stevens Fisheries Conservation and Management Act, an EFH Assessment has been prepared. The EFH
33 Assessment provides the basis for consultation between CPF and the National Marine Fisheries Service
34 (NMFS) concerning potential effects to EFH.

Red, Gold, Green, and White Beaches: Habitats, Communities, and Wildlife

36 The waters off MCB Camp Pendleton’s coastline are part of the Southern California Bight, which is part
37 of the Warm Temperate Northeast Pacific province and Temperate Northern Pacific realm (Spalding et al.
38 2007). The underwater environment of the project area contains a variety of habitat types, including kelp
39 and eelgrass beds, sandy substrates, and rocky bottom (NAVFAC Atlantic 2010a, b). Bathymetric
40 contours show a seafloor with a steep initial drop to approximately 23 ft (7 m) near the shoreline followed
41 by a gradual slope extending between 1.7 and 2.3 miles (2.7 and 3.7 km) from shore to a depth of

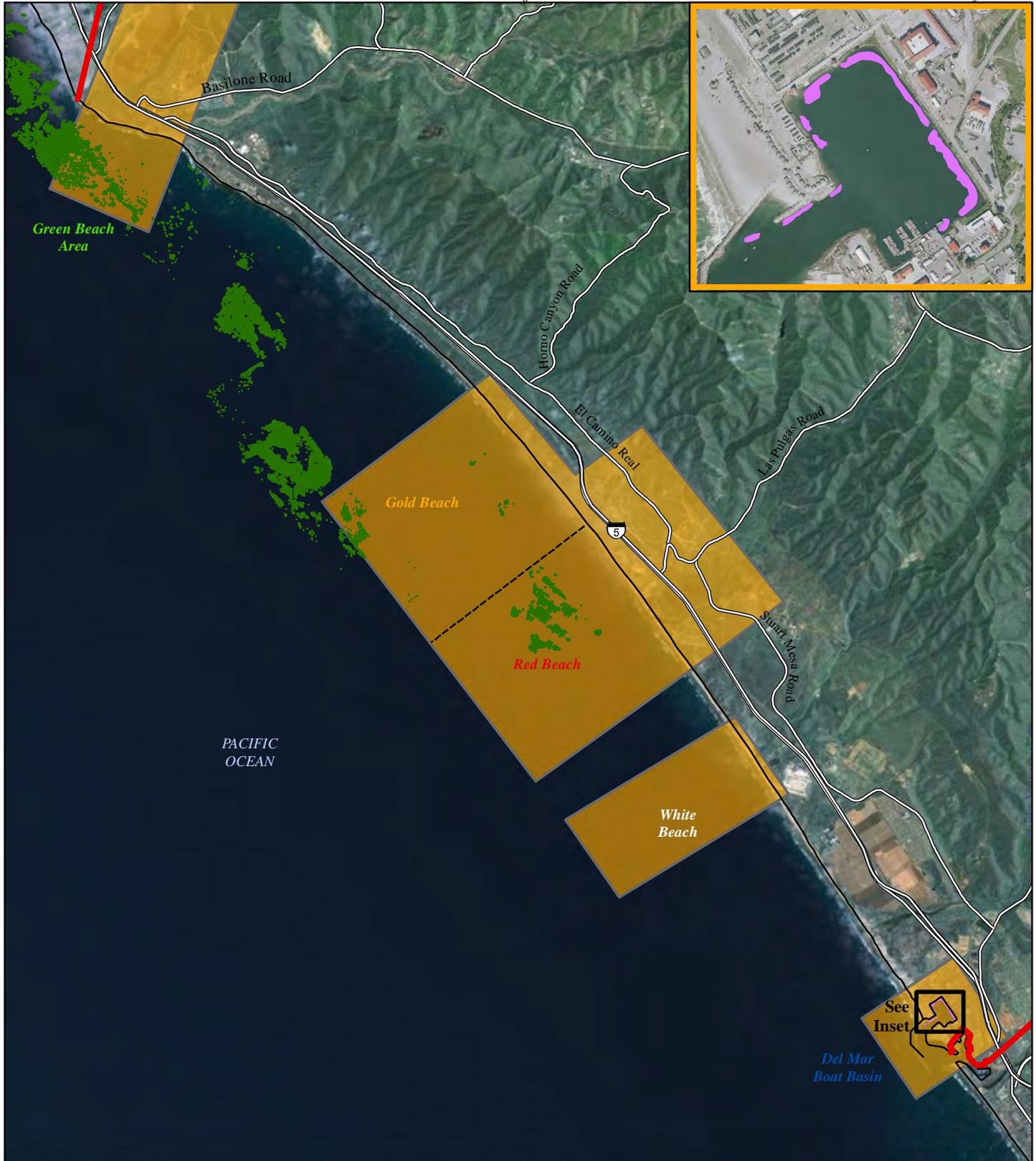
1 approximately 65 ft (20 m), beyond which the descending slope increases sharply (NAVFAC Atlantic
2 2010a).

3 Coastal beaches have unique bottom substrate features that determine in part where kelp canopy develops.
4 Substrate, nutrient availability, water temperature, grazing, and wave action, which vary spatially and
5 temporally, affect the growth and persistence of kelp beds. Locations of kelp beds within and adjacent to
6 the project area are presented on Figure 3.3-1. The intertidal substrate varies among the beach zones, as
7 does the type of benthic substrate and associated habitat offshore. Off of Green Beach and the State Lease
8 Area beaches, nearly a third of the substrate in depths less than 33 ft (10 m) is rocky. In contrast, sand and
9 mixed sediments characterize the shallow waters of other beaches (Gold, Red, and White). Sea grasses do
10 not occur in the surf zone of the sandy beach where amphibious landings would occur (NAVFAC Atlantic
11 2010a, b).

12 The San Onofre kelp bed grows off of Green Beach and State Lease Area beaches on low-relief bedrock
13 and cobble-boulder substrate and is estimated to cover 0.20 to 0.35 square miles (0.51 to 0.91 square km)
14 (Figure 3.3-1). In the northern portion of Gold Beach, offshore of Horno Canyon, rocky substrate and
15 scattered kelp occur between the depths of 33 and 50 ft (10 and 15 m). A rocky reef and cobble-boulder
16 bed, including some areas of high relief (3 ft [0.9 m] above the surrounding seabed), supports the
17 extensive Barn Kelp bed, which covers several square km in depths of 33 to 50 ft (10 to 15 m), roughly
18 0.6 to 1.2 miles (1 to 2 km) from shore (Figure 3.3-1). There is no kelp off of White Beach (Figure 3.3-1).

19 A 1,312-foot (400-m) wide band of cobble extends along the (33-ft) 10-m bottom contour across the
20 southern half of White Beach (NAVFAC Atlantic 2010a, b). While there is presently no kelp off of White
21 Beach (refer to Figure 3.3-1), a kelp bed was mapped in the area in 1911, but the accuracy of the map was
22 uncertain. After an apparent absence of 80 years, a “thinly dispersed” kelp population reappeared in the
23 same general area for two years (1991-1992), but subsequently disappeared (North and MBC Applied
24 Environmental Sciences 2001). Hence, the possibility exists that kelp could re-occur in this area in the
25 future.

26 In general, beach seining appeared to efficiently capture fish throughout the intertidal zone and the upper
27 subtidal habitat to about 8.2 ft (2.5 m) in depth. Thirty-nine different species (36 species of fishes and 3
28 species of invertebrate) were collected during the beach seine sampling effort conducted along the
29 coastline. The most abundant species collected were topsmelt (*Atherinops affinis*), California corbina
30 (*Menticirrhus undulatus*), and dwarf perch (*Micrometrus minimus*). Walleye surfperch (*Hyperprosopon*
31 *argenteum*), queenfish (*Seriphus politus*), barred surfperch (*Amphistichus argenteus*), spotfin croaker
32 (*Roncador stearnsii*), bat ray (*Myliobatis californica*), and round stingray (*Urobatis halleri*) were also
33 either spatially or temporally abundant with individual species totals exceeding 100 individuals. Only
34 three species of megabenthic invertebrate were collected during the beach seining effort; single
35 occurrences of the Ochre star (*Pisaster ochraceus*) and California spiny lobster (*Panulirus interruptus*),
36 and two hermit crabs (*Pagurus* spp.) were observed. Large amounts of drift kelp and other macroalgae
37 were sometimes present during beach seining efforts, often associated with a distinct group of fish species
38 (NAVFAC Atlantic 2010b).



- Legend**
- MCB Camp Pendleton Boundary
 - Project Area
 - Eelgrass
 - Kelp Beds
 - Major Road

Figure 3.3-1
Eelgrass and Kelp Beds in the Project Area and Vicinity

0 0.5 1
Miles

0 0.5 1
Kilometers



Sources: CDFW 2002;
MCB Camp Pendleton 2012b

1 Sixty-five species of fishes and 22 species of megabenthic invertebrates were collected in the nearshore
2 waters off the coastal beaches. The most abundant fish species captured was California lizardfish
3 (*Synodus lucioceps*). Queenfish and northern anchovy (*Engraulis mordax*), when combined, accounted
4 for 46 percent of the total catch and 22 percent of the total biomass. The most abundant megabenthic
5 invertebrates collected were black spotted shrimp (*Crangon nigromaculata*), ridgeback prawns (*Sicyonia*
6 *ingentis*) and brittle stars (*Ophiopsila californica*) (NAVFAC Atlantic 2010b). Green Beach had the
7 greatest overall abundance (8,696 individuals representing 59 species of fishes and megabenthic
8 invertebrates) and biomass of all the zones sampled (five beach areas and the Del Mar Boat Basin)
9 (NAVFAC Atlantic 2010b). California grunion (*Leuresthes tenuis*) are known to spawn on Gold, Red and
10 White beaches, but have not been observed on Green Beach (MCB Camp Pendleton 2011d).

11 **Del Mar Boat Basin: Habitats, Communities, and Wildlife**

12 Thirty-seven species of demersal fish (fish that live and feed on or near the bottom) and megabenthic
13 invertebrates were collected in the Del Mar Boat Basin (NAVFAC Atlantic 2010a). Slough anchovy was
14 the most abundant fish species comprising 52.9 percent of the total catch and Xantus' swimming crab
15 (*Portunus xantusii*) was the most abundant megabenthic invertebrate but comprised only 0.3 percent of
16 the total catch. Beach seine sampling in the Del Mar Boat Basin yielded 42 species of fishes and
17 megabenthic invertebrates dominated by northern anchovy, which comprised 72.1 percent of the total
18 catch. Species diversity was highest during the spring.

19 Subtidal dive surveys identified 1,075 fishes comprising 37 species; 8,521 megabenthic invertebrates
20 comprising 53 species; and 17 species of algae. The most abundant fish, invertebrate, and algae species
21 were topsmelt (*Atherinops affinis*), serpulid worms (*Serpula spp.*), and wireweed (*Sargassum muticum*),
22 respectively (NAVFAC Atlantic 2010b).

23 Soft bottom/eelgrass transects revealed 17 fish species, 25 megabenthic invertebrates species, and four
24 species of algae. The most abundant fish and megabenthic invertebrate species on the eelgrass transects
25 were cheekspot goby (*Ilypnus gilberti*), and Gould's bubble snail (*Bulla gouldiana*), respectively. These
26 results are similar to those from recent studies at the Port of Long Beach and Port of Los Angeles
27 (NAVFAC Atlantic 2010b). On rare occasions, California grunion have spawned near the Del Mar Boat
28 Basin jetty (MCB Camp Pendleton 2011d).

29 Within the Del Mar Boat Basin, eelgrass is located in shallower (less than 13 ft [4 m]) sheltered areas
30 with a muddy or sandy substrate on opposite sides of the channel (NAVFAC Atlantic 2010a). Eelgrass
31 surveys were conducted before and after JLOTS 2008 and Pacific Horizons 2009 (Merkel and Associates
32 2008, 2009). In the 2009 post-exercise survey, approximately 159,500 square ft (14,816 square m) of
33 eelgrass were mapped within the Del Mar Boat Basin (refer to Figure 3.3-1). In both surveys, similar
34 changes between pre- and post-construction eelgrass cover were observed between the project and control
35 areas, suggesting no effect of project activities on eelgrass (Merkel and Associates 2008, 2009). Juvenile
36 halibut (*Paralichthys californicus*) were common in the Del Mar Boat Basin, indicating that the Del Mar
37 Boat Basin — its eelgrass beds in particular — provides important nursery habitat for this commercially
38 and ecologically important species. The parasitology study revealed a high abundance and diversity of
39 parasites in fishes of the Del Mar Boat Basin, a preponderance of which are trophically transmitted, i.e.
40 through predation. This is indicative of diverse and functioning trophic links within the Del Mar Boat
41 Basin (NAVFAC Atlantic 2010b).

1 Special Status Species

2 Marine Mammals

3 Based on proximity and the similarity of marine habitat conditions, marine mammal occurrence is
 4 expected to be similar between the Silver Strand Training Complex and MCB Camp Pendleton. As a
 5 result, this section is based largely on the Silver Strand Training Complex Request for an Incidental
 6 Harassment Authorization for Silver Strand Training Complex training and testing activities, including
 7 Elevated Causeway (Navy 2012b), notably the HSTT EIS (Navy 2013b) and Letter of Authorization
 8 (NMFS 2013b). Table 3.3-1 summarizes information on the five species of marine mammals that have a
 9 high likelihood of occurrence in the nearshore waters of the project area. Other marine mammals that
 10 have a lower likelihood of occurrence in the project area are discussed in the text following Table 3.3-1.

Table 3.3-1. Summary of the Occurrence of Marine Mammal Species with the Highest Frequency of Occurrence in the Project Area

| Common Name Species Name Stock | Stock Abundance ¹ (coefficient of variation) | Annual Population Trend | Occurrence | Warm Season (May-Oct) Presence and Density ² (#/km ²) | Cold Season (Nov-Apr) Presence and Density (#/km ²) |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Pinnipeds | | | | | |
| California sea lion <i>Zalophus californianus</i> U.S. stock | 296,750 ³ | Increasing; Possibly stabilizing | Most common pinniped, Channel Islands breeding sites in the summer | YES 0.01 | YES 0.02 |
| Harbor seal <i>Phoca vitulina richardii</i> California stock | All California 30,196 (0.16) Estimated Southern California only abundance 5,271 ⁴ | Slight growth; Stabilizing | Common; Channel Islands haul outs including San Clemente Island; mainland haul-outs north of Point Mugu and La Jolla, CA | YES 0.06 | YES 0.19 |
| Odontocetes | | | | | |
| Bottlenose dolphin <i>Tursiops truncatus</i> California coastal stock | 323 (0.13) But likely 450-500 | Stable | Limited, small population within one km of shore | YES 0.20 | YES 0.20 |
| Long-beaked common dolphin <i>Delphinus capensis</i> California stock | 27,046 (0.59) | Unknown | Common nearshore species; occurrence may be variable due oceanographic conditions | YES 0.10 | YES 0.04 |
| Mysticetes | | | | | |
| Gray whale <i>Eschrichtius robustus</i> Eastern North Pacific stock | 19,126 (0.07) Migratory | Increasing >3.2% | Transient seasonal migrants | NO 0 | YES 0.01 |

Notes: ¹ All abundance estimates from NMFS Stock Assessment Reports (Carretta et al 2012; Allen and Angliss 2012) and reflect estimation of abundance for the entire stock.

² Densities used for pinnipeds were obtained from Carretta et al. (2000) using the offshore warm and cold season pinniped densities. This publication represents one of the few NMFS at-sea pinniped surveys within Southern California. While reflective of the more populous offshore numbers of pinnipeds, these values are likely over-predictive of actual at-sea pinniped density within the much smaller spatial extent of the coastal Silver Strand Training Complex area (shore to 4,000 yards from shore). Densities for the coastal stock of bottlenose dolphins was obtained from the National Centers for Coastal Ocean Science 2005 which presents NMFS data for various coastal segments along the California coast, including one adjacent to the Silver Strand Training Complex. Densities for gray whales was modified from Carretta et al. (2000) by scientists at the NMFS' Southwest Fisheries Science Center to reflect the limited nature of transitory gray whale presence within the very nearshore habitat of the Silver Strand Training Complex. Gray whales migrate through Southern California twice a year. Individual marine mammals likely only present on the order of minutes to hours in transit past the Silver Strand Training Complex (3 nautical miles/hour travel rate).

³ All pupping occurs in southern California.

⁴ Derived by NMFS from the aerial counts of all age classes within southern California only.

1 *Threatened and Endangered Species*

2 The potential occurrence of two ESA-listed endangered fish species, southern California steelhead
3 (*Oncorhynchus mykiss*) and tidewater goby (*Eucyclogobius newberryi*), in the littoral zone is considered
4 remote and discountable. Neither species has ever been detected in the nearshore waters, although rare
5 transit through the littoral zone is inferred on the basis of their occurrence in streams (steelhead) and
6 lagoons (goby) on MCB Camp Pendleton. These species are discussed further in the terrestrial section.

7 The black abalone (*Haliotis cracherodii*) is federally listed as endangered and occurred historically in
8 rocky intertidal to shallow subtidal habitats throughout southern California. The white abalone (*H.*
9 *sorenseni*) is also federally listed as endangered. There is no known historic occurrence of black or white
10 abalone offshore MCB Camp Pendleton.

11 Four federally listed threatened or endangered sea turtles species occur very infrequently in the waters
12 offshore of MCB Camp Pendleton and outside of the project area. The species are:

- 13 • Pacific loggerhead turtle (*Caretta caretta*) – federally threatened;
- 14 • green sea turtle (*Chelonia mydas agassizii*) – federally threatened;
- 15 • leatherback sea turtle (*Dermochelys coriacea*) – federally endangered; and
- 16 • olive ridley sea turtle (*Lepidochelys olivacea*) – federally threatened.

17 There is a resident foraging population of green sea turtles in the San Diego Bay area that breeds in
18 Mexico; no breeding sites are along the coast of California (MCB Camp Pendleton 2012a). None of the
19 listed turtles are known to breed or come ashore on base, and any such occurrence would be rare and
20 appropriately addressed on an individual basis if encountered (MCB Camp Pendleton 2012a; NMFS
21 2013c). Six federally endangered whale species potentially occur in the oceanic waters off the coast of
22 MCB Camp Pendleton:

- 23 • sei whale (*Balaenoptera borealis*);
- 24 • blue whale (*B. musculus*);
- 25 • fin whale (*B. physalus*);
- 26 • humpback whale (*Megaptera novaeangliae*);
- 27 • western north Pacific gray whale (*Eschrichtius robustus*); and
- 28 • sperm whale (*Physeter macrocephalus*).

29 In general, these species rarely occur near shore, but migrate seasonally offshore between primary mating,
30 feeding, and wintering locations (MCB Camp Pendleton 2012a). Because there are rare occurrences of
31 individuals associated with the endangered western subpopulation of gray whales occurring off California
32 (Mate et al. 2011, International Whaling Commission 2012), the HSTT BO (NMFS 2013c) included the
33 western subpopulation in the analysis of the eastern subpopulation, which is not an ESA-listed species.
34 However, these occurrences were deemed so rare as to be discountable (NMFS 2013c). Any occurrences
35 of the ESA-listed whale species would be rare and appropriately addressed on an individual basis if
36 encountered (MCB Camp Pendleton 2012a; NMFS 2013a, b, and c).

1 **3.3.2.2 Terrestrial Environment**

2 **Habitats, Communities, and Wildlife**

3 The majority of the terrestrial project area consists of beach, developed areas, disturbed habitat, and pre-
 4 existing paved and dirt roads. Although MCB Camp Pendleton has numerous jurisdictional waters of the
 5 U.S. (e.g., streams or wetlands), amphibious training exercises would not involve any construction or
 6 permanent impacts to such habitats. Jurisdictional waters of the U.S. are not analyzed further in this EA;
 7 however, jurisdictional aquatic habitat avoidance measures have been identified.

8 A diverse assemblage of terrestrial wildlife occurs on MCB Camp Pendleton. In addition to hundreds of
 9 invertebrates, MCB Camp Pendleton has documented the presence of more than 50 mammalian, 30
 10 reptilian, 10 amphibian, 300 avian, and 60 fish species (MCB Camp Pendleton 2012a). Many wildlife
 11 species are permanent residents on MCB Camp Pendleton. Other wildlife species, such as migratory
 12 birds, visit MCB Camp Pendleton seasonally. Most (96 percent) of the avian species on MCB Camp
 13 Pendleton are included on the list of migratory birds and are protected by the Migratory Bird Treaty Act
 14 and EO 13186 (MCB Camp Pendleton 2012a).

15 The wildlife species most likely to occur within or in the vicinity of the project area are common species
 16 that are adapted to noise and other human disturbance, as proposed amphibious training exercises would
 17 occur on beaches and in areas that are commonly used for military training and/or public recreation.

18 **Special Status Species**

19 Based on review of MCB Camp Pendleton’s provided geographic information system information (MCB
 20 Camp Pendleton 2012b) and current site conditions, 13 federally listed species (or suitable habitat for
 21 these species) are known to occur within or in the vicinity of the project area. Federally listed species
 22 known to occur or potentially occurring in the vicinity of the project area are presented in Table 3.3-2 and
 23 on Figures 3.3-2 through 3.3-5, and are described in the following sections. MCB Camp Pendleton is
 24 exempt from all critical habitat designations because of the protection to listed species provided under the
 25 Integrated Natural Resources Management Plan (MCB Camp Pendleton 2012a). Therefore, critical
 26 habitat is not discussed further in this document.

Table 3.3-2. Federally Listed or Candidate Species Known to Occur or Potentially Occurring in the Vicinity of the Proposed Action

| Common Name | Scientific Name | Federal Status | Habitat | Occurrence in Project Area | | | |
|------------------------|------------------------------------|----------------|--------------------------------------------|----------------------------|-------|-------|--------------------|
| | | | | Red & Gold | Green | White | Del Mar Boat Basin |
| Plants | | | | | | | |
| thread-leaved brodiaea | <i>Brodiaea filifolia</i> | Threatened | Grasslands | ✓ | - | ✓ | - |
| Invertebrates | | | | | | | |
| Riverside fairy shrimp | <i>Streptocephalus woottoni</i> | Endangered | Vernal pools | ✓ | - | ✓ | - |
| San Diego fairy shrimp | <i>Branchinecta sandiegonensis</i> | Endangered | Vernal pools | ✓ | - | ✓ | - |
| Amphibians | | | | | | | |
| arroyo toad | <i>Anaxyrus californicus</i> | Endangered | Rivers, major streams, surrounding uplands | - | ✓ | - | - |

Table 3.3-2. Federally Listed or Candidate Species Known to Occur or Potentially Occurring in the Vicinity of the Proposed Action

| Common Name | Scientific Name | Federal Status | Habitat | Occurrence in Project Area | | | |
|--------------------------------|--------------------------------------------|----------------|----------------------------------------------------|----------------------------|-------------------|-------------------|--------------------|
| | | | | Red & Gold | Green | White | Del Mar Boat Basin |
| Birds | | | | | | | |
| California least tern | <i>Sterna antillarum browni</i> | Endangered | Sandy beaches and coastal dunes | scattered nests | - | nesting area | - |
| coastal California gnatcatcher | <i>Poliophtila californica californica</i> | Threatened | Coastal sage scrub | ✓ | ✓ | ✓ | - |
| least Bell's vireo | <i>Vireo bellii pusillus</i> | Endangered | Riparian | ✓ | ✓ | ✓ | - |
| light-footed clapper rail | <i>Rallus longirostris levipes</i> | Endangered | Coastal fresh and salt water marshes | potential habitat | potential habitat | potential habitat | - |
| southwestern willow flycatcher | <i>Empidonax traillii extimus</i> | Endangered | Willow dominated riparian | ✓ | ✓ | ✓ | - |
| western snowy plover | <i>Charadrius alexandrinus nivosus</i> | Threatened | Sandy beaches | scattered nests | winter habitat | nesting area | scattered nests |
| Fish | | | | | | | |
| southern California steelhead | <i>Oncorhynchus mykiss</i> | Endangered | Rivers and major streams | - | ✓ | - | - |
| tidewater goby | <i>Eucyclogobius newberryi</i> | Endangered | Estuaries/coastal brackish lagoons | ✓ | ✓ | ✓ | - |
| Mammals | | | | | | | |
| Pacific pocket mouse | <i>Perognathus longimembris pacificus</i> | Endangered | Coastal mesas, in sparse grassland with sandy soil | - | ✓ | - | - |

Note: ✓ = occurs in project area at this location.

1 *Thread-leaved Brodiaea*

2 The federally threatened thread-leaved brodiaea is a bulbiferous, perennial plant that occurs at elevations
 3 between 30 ft (9 m) and 2,500 ft (765 m) (USFWS 2009, MCB Camp Pendleton 2012a). In San Diego
 4 County, thread-leaved brodiaea typically occurs in clay soils associated with open native or non-native
 5 grassland, open coastal sage scrub, or open coastal sage scrub-chaparral communities (USFWS 2011b).
 6 Figures 3.3-2 through 3.3-4 present known locations of thread-leaved brodiaea in the vicinity of the
 7 project area.

8 *Riverside Fairy Shrimp and San Diego Fairy Shrimp*

9 Fairy shrimp are small, translucent crustaceans found in naturally occurring ephemeral (vernal) pools and
 10 occasionally in non-naturally occurring depressions, road ruts, and ditches (ponded basins) that seasonally
 11 hold water. When water begins to pond during the wet season (roughly November to April), fairy shrimp
 12 begin to hatch from encysted embryos (cysts).

13 The federally endangered Riverside fairy shrimp is a medium sized fairy shrimp, typically 0.5 to 1.0 inch
 14 (1.3 to 2.5 centimeters), that is generally restricted to vernal pools and other non-vegetated ponded basins
 15 greater than 12 inches (30.5 centimeters) deep (USFWS 2008b). The federally endangered San Diego
 16 fairy shrimp is a small fairy shrimp, typically growing to 0.6 inch (1.5 centimeters). They are generally
 17 found in shallow (2 to 12 inches [5.1 to 30.5 centimeters] deep) vernal pools and ponded basins (MCB

1 Camp Pendleton 2012a, USFWS 2008a). Figures 3.3-2 through 3.3-4 present known locations of
2 Riverside and San Diego fairy shrimp in the vicinity of the project area.

3 *Arroyo Toad*

4 The federally endangered arroyo toad occurs in three major watersheds on MCB Camp Pendleton: Santa
5 Margarita, San Onofre, and San Mateo. Arroyo toads breed in the margins of open sandy/gravelly
6 streams, and avoid sites with deep or swift water (MCB Camp Pendleton 2012a). Adults typically migrate
7 to adjacent upland habitat when the intermittent stream channels and pools that they breed in dry out.
8 Figure 3.3-3 presents known arroyo toad habitat in the vicinity of the project area.

9 *California Least Tern*

10 The federally endangered California least tern is a small, migratory bird that nests and roosts in colonies
11 on the beach. They typically arrive at MCB Camp Pendleton in April and depart by September.
12 Approximately 25 percent of all California least tern nest locations occur at MCB Camp Pendleton
13 (Marschalek 2012). On MCB Camp Pendleton, California least tern colonial nesting sites are located at
14 the Santa Margarita River mouth (Blue Beach), North Beach (North), North Beach (South), French and
15 Aliso creeks (White Beach), and the salt flats of the Santa Margarita Estuary (MCB Camp Pendleton
16 2012a). Figures 3.3-4 and 3.3-5 present known California least tern nesting sites in the vicinity of the
17 project area.

18 *Coastal California Gnatcatcher*

19 The federally threatened California gnatcatcher is a small, non-migratory songbird that is a permanent
20 resident of coastal sage scrub vegetation, but will make limited use of adjacent habitats outside of the
21 breeding season (February 15 through August 31). This species occurs throughout most of MCB Camp
22 Pendleton in coastal sage scrub vegetation (MCB Camp Pendleton 2012a). Figures 3.3-2 through 3.3-4
23 present known coastal California gnatcatcher locations in the vicinity of the project area.

24 *Least Bell's Vireo*

25 The federally endangered least Bell's vireo is a small migratory songbird that typically inhabits riparian
26 habitats. The species arrives at MCB Camp Pendleton as early as mid-March and leaves for its wintering
27 grounds in August. The breeding season is from March 15 through August 31 (MCB Camp Pendleton
28 2012a). Approximately 33 percent of statewide least Bell's vireo nesting territories occur at MCB Camp
29 Pendleton (Lynn and Kus 2012). Figures 3.3-2 through 3.3-4 present known locations of least Bell's vireo
30 in the vicinity of the project area.

31 *Light-footed Clapper Rail*

32 The federally endangered light-footed clapper rail is a medium-sized marsh bird that lives and breeds in
33 coastal and freshwater marshes. Potential habitat for this secretive species occurs in the project area at
34 San Mateo and San Onofre estuaries (Green Beach), Las Flores Estuary (Red Beach), and French Estuary
35 (White Beach). However, since the 1980s, the species has only been detected on MCB Camp Pendleton at
36 the Santa Margarita River Estuary (MCB Camp Pendleton 2011c). Protection and management of light-
37 footed clapper rail habitat is provided for in the Estuarine and Beach Conservation Plan as an attachment
38 to the Riparian BO (USFWS 1995). Figures 3.3-2 through 3.3-4 present potential light-footed clapper rail
39 habitat in the vicinity of the project area.

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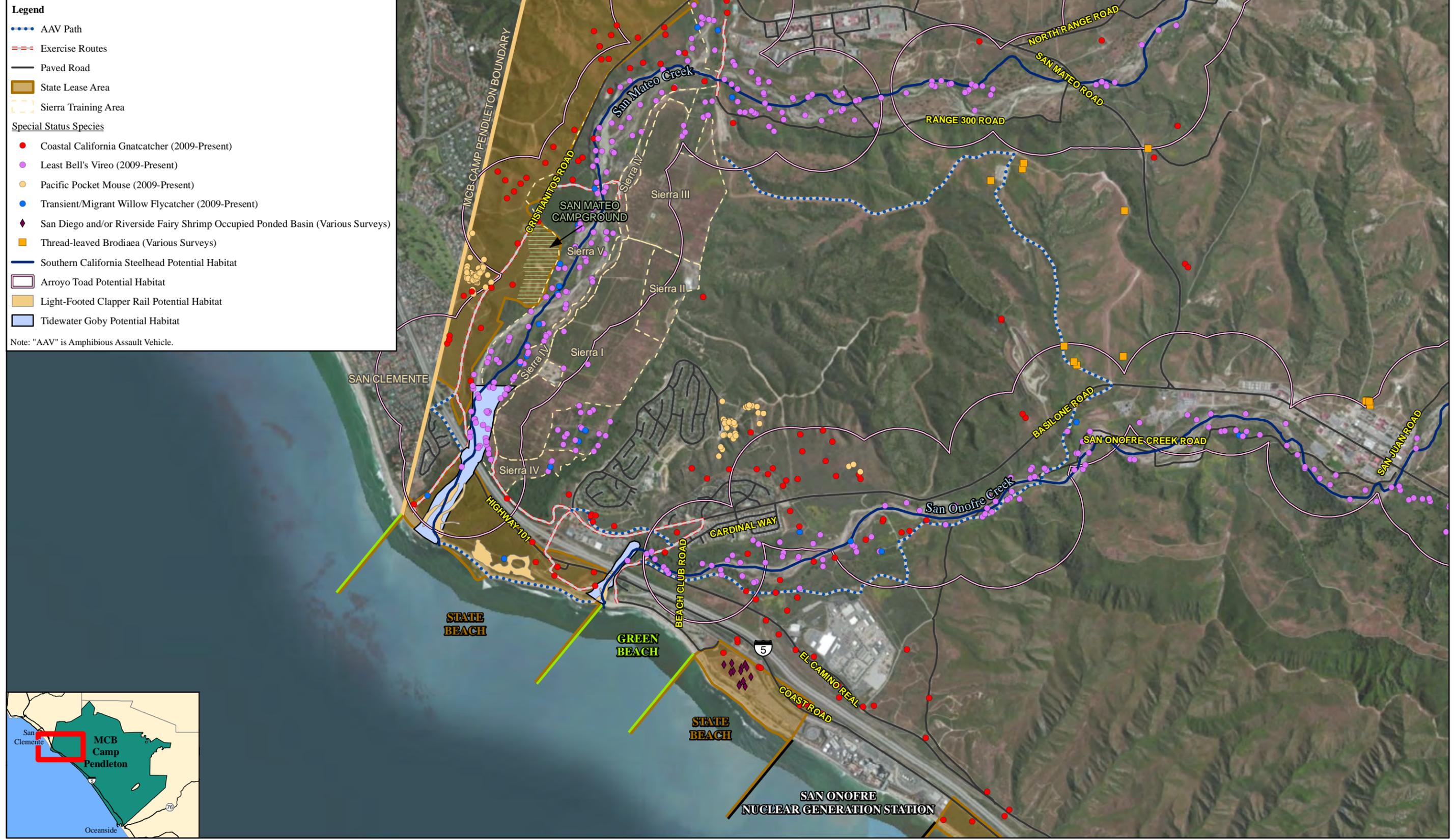
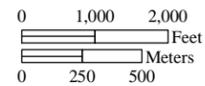


Figure 3.3-3
Special Status Species within and adjacent to Green Beach and Sierra Training Areas



Source: MCB Camp Pendleton 2012b



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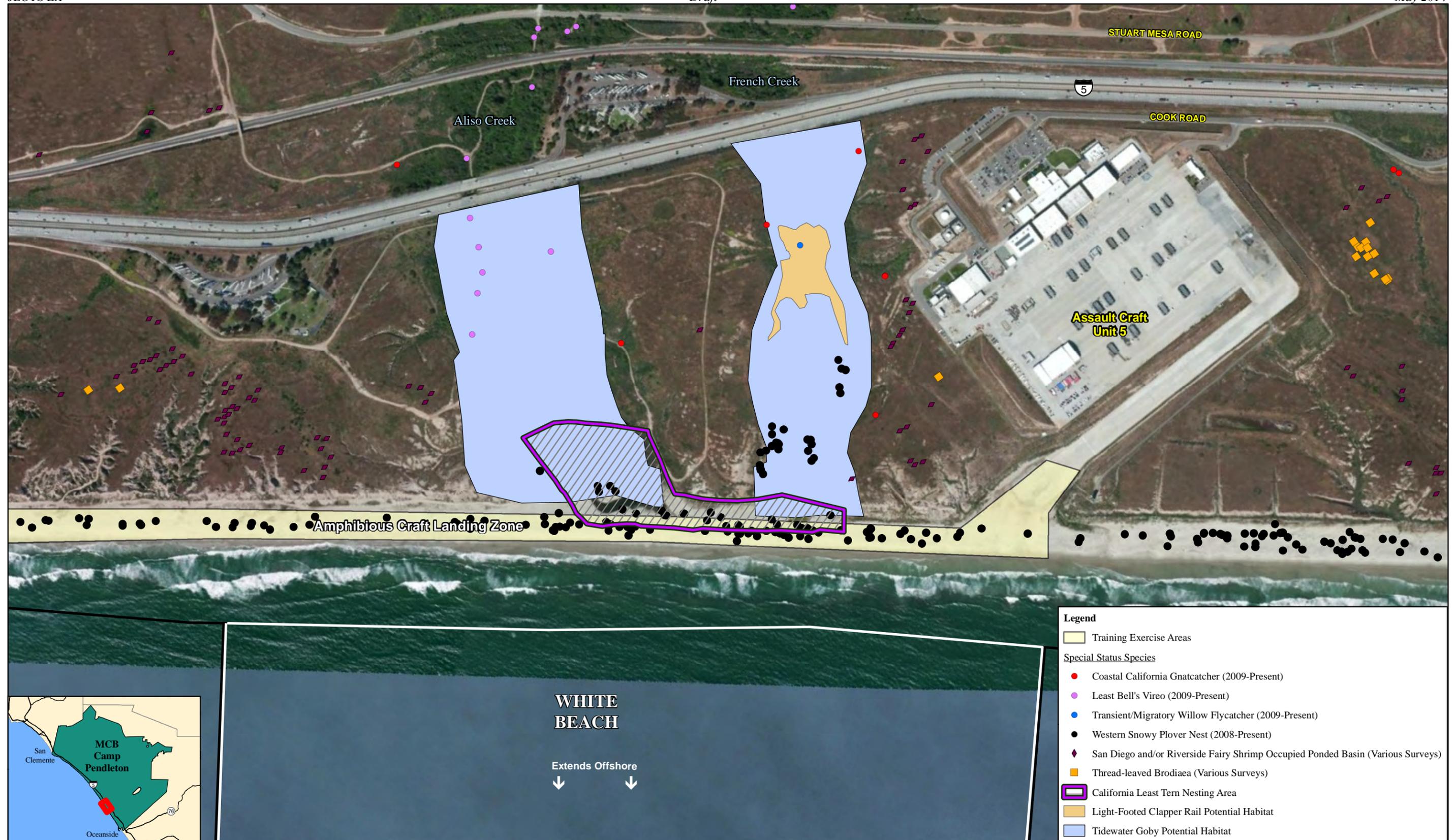


Figure 3.3-4
Special Status Species within and adjacent to White Beach

Source: MCB Camp Pendleton 2012b

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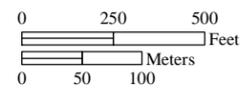


Figure 3.3-5
Special Status Species within and adjacent to the Del Mar Boat Basin



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1 *Southwestern Willow Flycatcher*

2 The federally endangered southwestern willow flycatcher is a migratory songbird that typically inhabits
3 densely vegetated riparian habitats. The southwestern willow flycatcher arrives at MCB Camp Pendleton
4 for the breeding season as early as March 15 and may be present through August 31. The only breeding
5 populations of southwestern willow flycatcher on MCB Camp Pendleton occur along the Santa Margarita
6 River (MCB Camp Pendleton 2012b). There are no known nesting locations in the vicinity of the project
7 area; Figures 3.3-2 through 3.3-4 present known locations of migratory/transient southwestern willow
8 flycatcher in the vicinity of the project area.

9 *Western Snowy Plover*

10 The federally threatened western snowy plover is a small shorebird that lives and nests on sandy, open
11 beaches along the coast. On MCB Camp Pendleton, the breeding season occurs from about March 1
12 through September 15. Large nesting sites on MCB Camp Pendleton include: the Santa Margarita River
13 mouth (Blue Beach), Cocklebur Beach, French and Aliso creeks (White Beach), and the salt flats of the
14 Santa Margarita Estuary (MCB Camp Pendleton 2012b). Western snowy plovers are also known to nest
15 in scattered beach locations throughout much of MCB Camp Pendleton, including in and around Red and
16 Gold Beach and the Del Mar Boat Basin. During the non-breeding season, the species forages and roosts
17 in more widely scattered locations and likely utilizes all of the beaches at MCB Camp Pendleton.
18 Protection and management of the western snowy plover and its habitat is provided for in the Estuarine
19 and Beach Conservation Plan as an attachment to the Riparian BO (USFWS 1995). Figures 3.3-2, 3.3-4,
20 and 3.3-5 present known western snowy plover nesting locations in the vicinity of the project area.

21 *Southern California Steelhead*

22 The federally endangered southern California steelhead is an anadromous form of rainbow trout that uses
23 freshwater habitats during the first years of its lifecycle, then moves to marine water for two to three years
24 before returning to freshwater to spawn (USFWS 1998). Spawning season for this species occurs January
25 through May (Boughton et al. 2006). San Mateo Creek and San Onofre Creek have been historically
26 occupied and/or used by southern California steelhead (MCB Camp Pendleton 2012a). Figure 3.3-3
27 presents potential southern California steelhead habitat in the vicinity of the project area.

28 *Tidewater Goby*

29 The federally endangered tidewater goby is a small fish that lives and reproduces in coastal lagoons. The
30 tidewater goby inhabits shallow waters (less than 3 ft [0.9 m] deep) that are slow moving to still but not
31 stagnant (Irwin and Soltz 1984). In southern California, San Mateo, San Onofre, and Las Flores creeks are
32 considered by the USFWS the largest and most persistent populations of tidewater gobies in the region
33 (Lafferty 2012). Protection and management of the tidewater goby and its habitat is provided for in the
34 Estuarine and Beach Conservation Plan as an attachment to the Riparian BO (USFWS 1995). Figures 3.3-
35 2 through 3.3-4 present tidewater goby habitat in the vicinity of the project area.

36 *Pacific Pocket Mouse*

37 The federally endangered Pacific pocket mouse is a nocturnal burrowing species that only occurs on
38 Camp Pendleton in three locations (MCB Camp Pendleton 2012a). Only one of these three known
39 locations for this species is in the vicinity of the project area. The area is located immediately west of
40 Cristianitos Road in sage scrub habitat (MCB Camp Pendleton 2012b) (refer to Figure 3.3-3).

1 3.3.3 ENVIRONMENTAL CONSEQUENCES

2 Amphibious training exercises would occur in five general geographic areas at MCB Camp Pendleton:
3 offshore, in the littoral zone (including the Del Mar Boat Basin), on the beach, in terrestrial areas, and in
4 the air (R-2503; refer to Figure 2-19). The exercises described in Chapter 2 are similar in scope and size
5 to other previously analyzed and approved operations at MCB Camp Pendleton. Amphibious training
6 exercises would comply with programmatic avoidance measures and various BOs from previous USFWS
7 and/or NMFS Section 7 of the ESA consultations as follows:

- 8 • Training associated with the Sierra Training Area (located inland of Green Beach) would comply
9 with the EA to establish Sierra Training Area (MCB Camp Pendleton 2011b) the associated BO, and
10 the Supplemental Sierra Training Area EA (MCB Camp Pendleton 2014a).
- 11 • MV-22 operations would comply with the EA for the Tactical Employment of MV-22 Osprey
12 Tiltrotor Aircraft in Support of Marine Corps Training and Readiness Operations at MCB Camp
13 Pendleton (Marine Corps Installations West 2013) and associated BO.
- 14 • Training in and near riparian, estuarine, and beach areas would comply with the Programmatic
15 Riparian BO (USFWS 1995). Activities within the estuary/coastal zone areas would be conducted in
16 accordance with the Estuarine/Beach Ecosystem Conservation Plan. The Estuarine/Beach Ecosystem
17 Conservation Plan is designed to ensure that estuarine and beach communities on MCB Camp
18 Pendleton are sufficiently resilient to withstand natural and human disturbances including military
19 training activities. Any riparian habitat impacts would be mitigated in accordance with the Riparian
20 BO (MCB Camp Pendleton 2012a, USFWS 1995).
- 21 • Offshore and nearshore training would comply with the 2013 HSTT EIS (Navy 2013b) and
22 associated 2013 Letter of Authorization (NMFS 2013b) and NMFS BO (NMFS 2013c). This covers
23 a wide range of amphibious operations that occur in the area of the Pacific Ocean known as the
24 Camp Pendleton Amphibious Assault Area, an ocean area adjacent to the shoreline of MCB Camp
25 Pendleton used for nearshore amphibious vehicle and landing craft training.

26 Amphibious training exercises would not include any earth moving activities or removal of vegetation
27 that would impact biological resources. All ground transport of vehicles and personnel would be restricted
28 to existing ranges and roads. Therefore, this analysis focuses on potential impacts of the Proposed Action
29 not covered by the BOs from previous NEPA actions. All training associated with the Proposed Action
30 would comply with Marine Corps Installations West-MCB Camp Pendleton Range and Training Area
31 Standing Operating Procedures (MCIWEST-MCBCAMPENO 3500.1) and mitigation measures (refer to
32 Table 3.0-1).

33 3.3.3.1 No Action Alternative

34 Red, Gold, and Green Beaches: Habitats, Communities, and Wildlife

35 Under the No Action Alternative, vessel activities would continue to be carried out in the nearshore
36 waters of Red, Gold, and Green beaches. Cargo vessels would operate offshore of kelp beds and the surf
37 zone. Lighterage vessels and beach landing craft would continue to avoid kelp beds as an operational
38 practice. Anchoring sites and lighterage transit routes would continue to avoid kelp beds via visual
39 reconnaissance.

40 Under the No Action Alternative, the potential impacts to vertebrates and invertebrate associated with
41 surface vessels traveling through the water would continue to be limited to momentary disturbance as the
42 vessels pass in proximity to the animal, direct mortality from a collision with a moving vessel or its
43 propeller or anchor, or through changes in local water quality. Such impacts from surface vessels are

1 unlikely for fauna that are closely associated with benthic habitat. Overall, beach vessel traffic is expected
2 to have a very limited and less than significant impact on marine flora or fauna.

3 Under the No Action Alternative, a standing watch for marine mammals and sea turtles would continue to
4 be present during all Elevated Causeway installation/removal activities. Procedures would be in place to
5 ensure that marine mammals that are known to occur within, or transit through the project area during
6 migration, would not be disturbed by amphibious training exercises. In the event that a marine mammal is
7 sighted within an area subject to disturbance, and such presence has the potential to injure, harm or harass
8 the marine mammal, all activities in that area would cease until either: 1) the mammal exits the area; or 2)
9 activities are relocated away from the mammal's location. The sighting and corresponding information
10 would be logged per the HSTT BO (NMFS 2013c).

11 Under the No Action Alternative, the Offshore Petroleum Discharge System and Amphibious Bulk
12 Liquid Transfer System would continue to be deployed and used to simulate the transfer of petroleum
13 products from ships to forces on the shore. Small fish and invertebrates may be subject to direct mortality
14 from entrainment at the seawater intake as well as Tactical Water Purification System activities; however,
15 fish may avoid entrainment by leaving or avoiding the temporary disturbance in the area. As divers would
16 select the Offshore Petroleum Discharge System Single Anchor Leg Mooring resting site to avoid kelp
17 beds or environmentally sensitive areas, limited and less than significant disturbance to the marine flora
18 would occur.

19 Based on the Navy's analysis for the Silver Strand Training Complex (Navy 2012b), Elevated Causeway
20 construction would continue to generate underwater sound sufficient to cause injury or mortality to fish in
21 the immediate area (< 328 ft [100 m]) from pile driving, and result in potential disturbance to fish at
22 distances of 0.6 – 1.2 miles (1 – 2 km). Given the temporary nature of this impact, the impact would be
23 less than significant.

24 Adherence to standard operating procedures for fuel handling and ballast water management (as
25 contained in OPNAVINST 5090.1D [Chapter 35]) would continue to be followed to avoid potential
26 impacts of the discharge of pollutants or release of invasive species into the marine environment.

27 Therefore, with the application of identified mitigation measures (refer to Table 3.0-1), there would be no
28 significant impacts to marine habitats, communities, and wildlife with the continued implementation of
29 the No Action Alternative.

30 **Special Status Species**

31 Under the No Action Alternative, the potential for harassment to marine mammals from amphibious
32 training exercises is addressed in the HSTT EIS/Overseas EIS (Navy 2013b) and associated Letter of
33 Authorization to take marine mammals (NMFS 2013a, b).

34 Therefore, with implementation of the measures identified in the HSTT Letter of Authorization (NMFS
35 2013a, b), impacts to marine mammals would continue to be less than significant.

36 Federally listed marine species may occur in the nearshore waters of the project area. As documented in
37 the HSTT Final EIS/Overseas EIS (Navy 2013b) and the related NMFS BO (NMFS 2013c), the Navy
38 consulted with NMFS regarding the potential effects of amphibious training exercises in the nearshore
39 waters of MCB Camp Pendleton. No adverse effects to listed species of marine mammals and sea turtles
40 were identified. Under the No Action Alternative, with the continued implementation of the proposed
41 monitoring and avoidance measures and mitigation measures identified in this document, the HSTT Final

1 EIS/Overseas EIS (Navy 2013b), and the related NMFS BO (NMFS 2013c), there would continue to be
2 no negative interactions with these species.

3 Therefore, with the application of mitigation and monitoring measures and identified mitigation measures
4 (refer to Table 3.0-1), there would be no significant impacts to marine special status species with the
5 continued implementation of the No Action Alternative.

6 **Del Mar Boat Basin**

7 Activities within the Del Mar Boat Basin would continue as they have historically, resulting in recurring,
8 localized, and short-term increases in bottom habitat disturbance and turbidity. This represents a
9 continuation of the baseline condition, and is not expected to alter the long-term abundance and diversity
10 of fish and invertebrate communities in the basin as a whole. Based on pre- and post-construction surveys
11 conducted for the JLOTS 2008 and Pacific Horizon 2009 exercises (Merkel and Associates 2008, 2009),
12 eelgrass abundance would not be affected, and the No Action Alternative would continue to have a less
13 than significant impact on eelgrass in the Del Mar Boat Basin.

14 Therefore, with the application of mitigation measures (refer to Table 3.0-1), there would be no
15 significant impacts to marine biological resources in the Del Mar Boat Basin with the continued
16 implementation of the No Action Alternative.

17 **Terrestrial Environment**

18 *Habitats, Communities, and Wildlife*

19 Under the No Action Alternative, vehicles would continue to not drive through any intact native
20 vegetation, nor would any sensitive habitats (e.g., coastal sage scrub, riparian, or natural vernal pools) be
21 directly impacted. All ground transport of vehicles and personnel would continue to be restricted to
22 existing ranges and roads. Terrestrial activities would include use of existing paved and dirt roads,
23 establishment and use of tent camps at Artillery Firing Area 15 and/or Artillery Firing Area 16, use and
24 closure of the San Mateo Campground, placement of temporary security barriers, vehicle maintenance
25 and refueling, vehicle staging, and cargo reloading at the Del Mar Boat Basin.

26 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
27 no significant impacts to terrestrial habitats, communities, or wildlife with the continued implementation
28 of the No Action Alternative.

29 *Special Status Species*

30 Under the No Action Alternative, impacts to thread-leaved brodiaea, light-footed clapper rail, southern
31 California steelhead, and Pacific pocket mouse would continue to be negated because of lack of habitat in
32 the project area, absence of the species from areas of environmental impact, and/or coverage under
33 previously analyzed NEPA actions. Although these species occur, or have suitable habitat, in the general
34 vicinity of the project area, the amphibious training exercises would continue to not impact these species
35 or their habitats. Impacts to all other federally listed species under the No Action Alternative would
36 continue to not be significant due to the reasons presented in the following paragraphs.

37 The California least tern and western snowy plover both have established scattered nests, although rarely,
38 on Red Beach between March 1 and September 15 (MCB Camp Pendleton 2012a). These nests are
39 marked with carconite stakes and avoided. The No Action Alternative may affect, but is not likely to
40 adversely affect the California least tern and western snowy plover. However, beach training activities
41 associated with the No Action Alternative that may affect terns and plovers would be covered under the

1 Programmatic Riparian BO (USFWS 1995) as Class III activities and potential effects to the species and
2 their habitats would be considered offset by the on-going implementation of the Riparian Ecosystem
3 Conservation Plan (MCB Camp Pendleton 2012a). An annual report of Class III activities is sent to the
4 USFWS at the end of each fiscal year.

5 Therefore, impacts to California least tern and western snowy plover would continue to not be significant.

6 All terrestrial project components would continue to be restricted to beaches, paved and dirt roads,
7 previously disturbed and dedicated training areas, and developed areas. No naturally occurring vernal
8 pools would be impacted. Any fairy shrimp that occur in disturbed road ruts or other non-natural basins
9 already exist in a disturbed environment and any impacts to them would be covered under previous NEPA
10 documentation (e.g., MCB Camp Pendleton 2011b). In addition, vehicle operations on existing paved and
11 dirt roads during all seasons are covered under the Programmatic Riparian BO (USFWS 1995) as Class
12 IV activities, for which no Section 7 of the ESA consultation is required.

13 Therefore, impacts to listed fairy shrimp species would continue to not be significant.

14 The arroyo toad occurs within the San Mateo and San Onofre watersheds. All terrestrial actions
15 associated with the No Action Alternative would continue to avoid these large drainages. Incidental take
16 of toads due to direct mortality on pre-existing roads is not quantifiable, nor would traffic associated with
17 proposed amphibious training exercises be outside of the normal confines of road use on MCB Camp
18 Pendleton. Vehicle operations on existing paved and dirt roads, including established creek crossings,
19 during all seasons are covered under the Programmatic Riparian BO (USFWS 1995) as Class IV
20 activities, for which no Section 7 of the ESA consultation is required. Any riparian habitat impacts would
21 be mitigated in accordance with the Riparian BO (MCB Camp Pendleton 2012a, USFWS 1995).

22 Therefore, impacts to arroyo toad would continue to not be significant.

23 Although coastal California gnatcatcher and least Bell's vireo territories, as well as migratory/transient
24 willow flycatchers have been located in and around portions of the project area, under the No Action
25 Alternative, there would be no direct impacts to these species' habitats. Noise and visual disturbance
26 associated with establishment and use of tent camps at Artillery Firing Area 15 and/or Artillery Firing
27 Area 16 could temporarily displace coastal California gnatcatchers; however, these areas are already pre-
28 existing training areas that experience heavy traffic and human disturbance. The No Action Alternative
29 may affect, but is not likely to adversely affect the coastal California gnatcatcher and least Bell's vireo.
30 However, training activities associated with the No Action Alternative that may affect these species
31 would be covered under the Programmatic Riparian BO (USFWS 1995) as Class III activities and
32 potential effects to the species and their habitats would be considered offset by the on-going
33 implementation of the Riparian Ecosystem Conservation Plan (MCB Camp Pendleton 2012a). Any
34 riparian habitat impacts would be mitigated in accordance with the Riparian BO (MCB Camp Pendleton
35 2012a, USFWS 1995).

36 Therefore, impacts to these bird species would continue to not be significant.

37 Coastal lagoons and estuaries would continue to not be directly impacted by beach activities. Mitigation
38 measures provide guidance for vehicular traffic that must cross creeks/estuaries with an open connection
39 to the ocean. In addition, vehicle operations on existing paved and dirt roads, including established creek
40 crossings, during all seasons are covered under the Programmatic Riparian BO (USFWS 1995) as Class
41 IV activities, for which no Section 7 of the ESA consultation is required.

42 Therefore, impacts to the tidewater goby would continue to not be significant.

1 3.3.3.2 Alternative 1

2 Impacts under Alternative 1 would be similar to those presented under the No Action Alternative, but
3 would occur more frequently. However, impacts to sensitive resources would be avoided, and, as a result,
4 the approximately 25 percent increase in annual exercise tempo would not result in a significant impact to
5 biological resources. The following additional impacts would occur under Alternative 1.

6 **Marine Habitats, Communities, and Wildlife**

7 Vessel activities associated with Alternative 1 would be carried out in the nearshore waters of Red, Gold,
8 and Green beaches at a higher tempo than the No Action Alternative. The higher annual exercise tempo
9 and larger geographic extent of activity (i.e., JLOTS, MPF, and FEX activities would also occur at Green
10 Beach) would result in a greater potential for impacts to habitats, communities, and wildlife under
11 Alternative 1 to those compared to the No Action Alternative; however, impacts would be similar to those
12 analyzed and presented for the No Action Alternative.

13 Alternative 1 is expected to result in the take of marine mammals. However, as discussed above, the
14 potential for take is addressed in the HSTT EIS/Overseas EIS (Navy 2013b) and associated Letter of
15 Authorization to take marine mammals (NMFS 2013a, b). Through that process, mitigation and
16 monitoring measures would apply.

17 With implementation of the measures identified in the HSTT EIS/Overseas EIS Letter of Authorization,
18 impacts to marine mammals would continue to be less than significant.

19 Federally listed marine species may occur in the nearshore waters of the project area. As documented in
20 the HSTT Final EIS/Overseas EIS (Navy 2013b) and the related NMFS BO (NMFS 2013c), the Navy
21 consulted with NMFS regarding the potential effects of amphibious training exercises in the nearshore
22 waters of MCB Camp Pendleton. No adverse effects to listed marine species were identified for these
23 activities. Under Alternative 1, with the continued implementation of the proposed monitoring and
24 mitigation measures identified in this document and the HSTT Final EIS/Overseas EIS (Navy 2013b) and
25 related NMFS BO (NMFS 2013c), there would continue to be no negative interactions with these species.

26 Therefore, with the application of mitigation and monitoring measures and identified mitigation measures
27 (refer to Table 3.0-1), there would be no significant impacts to marine special status species with the
28 continued implementation of the Alternative 1.

29 Under Alternative 1, lighterage craft refueling activities would be conducted in accordance with the Spill
30 Prevention Control and Countermeasure Plan (Navy 2013a), the HSTT EIS (Navy 2013b), and Navy spill
31 prevention protocols. The Navy uses special care to minimize the potential for spills during at-sea
32 refueling operations. The Navy has a system in place with checks to ensure at-sea refueling operations are
33 conducted in a proper manner. To minimize the potential for spills of JP5 (the fuel used at sea) during at-
34 sea refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C,
35 *Environmental Protection Program* and planning procedures and instructions such as those outlined in 33
36 CFR 156.150.

37 The density of kelp beds off of Green Beach and the State Lease Area beaches is greater as compared to
38 Red and Gold beaches (see Figure 3.3-1); therefore, there could be an increased potential for impacting
39 kelp beds under Alternative 1 (kelp bed density can fluctuate over time in response to several
40 oceanographic factors). However, anchoring sites and lighterage transit routes would avoid kelp beds. The
41 Joint High Speed Vessel would not increase impacts to marine biological resources as the Joint High
42 Speed Vessel would be operated in a manner consistent with existing vessels and subject to the same
43 mitigation measures (e.g., posting of a standing watch for marine mammals and sea turtles).

1 California grunion are known to spawn near the Del Mar Boat Basin jetty, as well as on Gold and Red
2 Beaches, but have not been observed on Green Beach (MCB Camp Pendleton 2011d). California grunion
3 are not a state or federally protected species but, due to their unique spawning habits and a loss of suitable
4 beaches for spawning, specific regulations by the California Department of Fish and Wildlife have been
5 put in place to protect the species. However, because the Proposed Action would affect relatively small
6 areas and be of a brief duration, the impacts would not be significant, and no mitigation measures are
7 proposed for California grunion.

8 Therefore, with the application of mitigation measures (refer to Table 3.0-1), there would be no
9 significant impacts to marine habitats, communities, wildlife, and special status species from
10 implementation of Alternative 1.

11 **Terrestrial Habitats, Communities, and Wildlife**

12 Under Alternative 1, the increased geographic scope of amphibious training would increase the potential
13 for impacts to terrestrial biological resources. The increase in JLOTS, MPF, and FEX related training
14 activities in the Green Beach area would be conducted in accordance with existing NEPA documentation
15 (i.e., MCB Camp Pendleton 2011b and USMC 2013a). For activities not covered under previous NEPA
16 actions, Alternative 1 would comply with the Programmatic Riparian BO (USFWS 1995) as described in
17 Section 3.3.3.1 for the No Action Alternative.

18 Therefore, with the application of mitigation measures (refer to Table 3.0-1), there would be no
19 significant impacts to terrestrial habitats, communities, wildlife, and special status species from
20 implementation of Alternative 1.

21 **3.3.3.3 Alternative 2**

22 Alternative 2 would allow exercise planners to utilize additional beach and training areas at MCB Camp
23 Pendleton, as compared to Alternative 1. Under Alternative 2, proposed amphibious training exercises
24 would occur at a higher tempo as compared to existing conditions. As with Alternative 1, impacts to
25 marine species would potentially occur, but these impacts would be minimized by the continued
26 implementation of the proposed monitoring and avoidance measures and mitigation measures identified in
27 this document, the HSTT Final EIS/Overseas EIS (Navy 2013b), and the related NMFS BO (NMFS
28 2013c).

29 The additional activities and the inclusion of White Beach would not result in a significant impact on
30 marine or terrestrial biological resources because military vehicle operations transiting parallel to the
31 beach during breeding season would keep one wheel in the water to minimize potential impacts to terns
32 and plovers. Further, vehicle operations, inside fenced areas on the edge of the bluff between Aliso and
33 French Creeks (White Beach), are not authorized between March 1 and September 15. While California
34 grunion spawning occurs on White Beach (MCB Camp Pendleton 2011d), because the Proposed Action
35 would affect relatively small areas and be of a brief duration, the impacts would be less than significant,
36 and no mitigation measures are proposed for California grunion. The training exercises occurring at
37 White Beach would be covered under the Programmatic Riparian BO (USFWS 1995) as Class III
38 activities and potential effects to terns and plovers would be considered offset by the on-going
39 implementation of the Riparian Ecosystem Conservation Plan (MCB Camp Pendleton 2012a).

40 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
41 no significant impacts to biological resources from implementation of Alternative 2.

3.4 CULTURAL RESOURCES

3.4.1 REGULATORY SETTING

Cultural resources are defined as prehistoric and historic sites, structures, districts, landscapes, objects or other evidence of human activity or other places that are considered significant to a community, culture, or ethnic group. Significant cultural resources are those that meet one or more criteria for inclusion in the National Register of Historic Places. The responsibilities of federal agencies with respect to these resources are identified in several regulations, including the National Historic Preservation Act of 1966, as amended, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act, as well as Marine Corps Order P5090.2A. The National Historic Preservation Act established guidelines for the protection, enhancement, and preservation of any property that possesses significant archeological, architectural, historical, or cultural characteristics. Because this EA relies on Section 106 of the National Historic Preservation Act in its analysis of potential impacts to cultural resources, certain terminology used in this section will be consistent with those used in Section 106 and will differ from other sections in this document.

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effect of any undertaking upon historic properties. A historic property is defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. A building, structure, archaeological site, or other resource is considered a historic property if it meets at least one of the following National Register of Historic Places eligibility criteria:

- A. Is associated with events that have made a significant contribution to the broad pattern of history, or
- B. Is associated with the lives of persons significant in the past, or
- C. Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values or that represent a significant and distinguishable entity whose components may lack individual distinction, or
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

Section 106 consultation for the Proposed Action with the California State Historic Preservation Office was initiated in February 2014 by MCB Camp Pendleton (Appendix A).

The area of potential effects (APE) for cultural resources includes the adjacent offshore and beach areas at Red, Gold, Green, and White beaches, Artillery Firing Areas 15 and 16, the Sierra Training Area, access roads to these training areas, and the Del Mar Boat Basin. The locations where surface disturbing activities may occur (i.e., along paths, roads, routes and within training areas) are referred to as the project area. To account for potential indirect effects, this EA also considers potential impacts to resources within an area of concern, a region that extends 100 ft (33 m) outward from the edge the project area. Previous surveys and studies of the APE were conducted by ASM (Reddy 1996; Reddy et al. 1994, 1997, and 1998; Becker et al. 2010; Iversen and Becker 2009); Far Western (King 2000); Glenn and Crawford 1994; York 2008, 2009; and York et al. 2010. Based on these identification efforts, MCB Camp Pendleton has determined that a total of 48 archaeological sites are located within or adjacent to the APE. The status of these sites relative to listing on the National Register of Historic Places is summarized below.

- Listed: one site
- Eligible for listing: 17 sites (including four within the San Mateo Archaeological District)
- Ineligible for listing: seven sites

- 1 • Previously determined to be eligible, but requiring concurrence from State Historic Preservation
2 Office: four sites
- 3 • Previously determined to be ineligible, but requiring concurrence from State Historic Preservation
4 Office: seven sites
- 5 • Unevaluated sites assumed to be eligible for listing: 12 sites

6 **3.4.2 AFFECTED ENVIRONMENT**

7 **3.4.2.1 Prehistory and Ethnohistory**

8 Current knowledge of the prehistory of MCB Camp Pendleton and its relationship to cultural
9 developments throughout southern California is considered in detail elsewhere (Reddy and Byrd 1997)
10 and will only be summarized here. The sequence begins in the Paleoindian period (11,500–8,500 years
11 before present [B.P.]), a time in which adaptations were formerly believed to have been focused on the
12 hunting of large game but are now recognized to represent more generalized hunting and gathering, with
13 considerable emphasis on marine resources (Erlandson 1994; Jones 1991). The following period, the
14 Archaic (8,500–1,300 B.P.), is traditionally seen as encompassing both a coastal and an inland focus, with
15 the coastal Archaic represented by the shell middens of the La Jolla complex and the inland Archaic
16 represented by the Pauma complex. Coastal settlement is also seen as having been significantly affected
17 by the stabilization of sea levels around 4,000 years ago that led to a general decline in the productivity of
18 coastal ecosystems. Nevertheless, recent research on MCB Camp Pendleton has documented continued
19 occupation along the coast well after this decline was in progress (Byrd 1996, 1998).

20 The Late Prehistoric period (1,300–200 B.P.) is marked by the appearance of small projectile points
21 indicating the use of the bow and arrow, the common use of ceramics, and the replacement of
22 inhumations with cremations, all characteristic of the San Luis Rey complex as defined by Meighan
23 (1954). The San Luis Rey complex is divided temporally into San Luis Rey I and San Luis Rey II, with
24 the latter distinguished mainly by the addition of ceramics. Along the coast of northern San Diego
25 County, deposits containing significant amounts of *Donax gouldii* shell are now often assigned to the Late
26 Prehistoric, based on a well-documented increase in the use of this resource at this time (e.g., Byrd and
27 Reddy 1999). The inception of the San Luis Rey complex is suggested by True (1966; True et al. 1974) to
28 mark the arrival of Takic speakers from regions farther inland. Waugh (1986) is in general agreement
29 with True, but suggests that the migration was probably sporadic and took place over a considerable
30 period. When the Spanish arrived in southern California, the area now known as MCB Camp Pendleton
31 was occupied by Takic-speaking Native Americans known to the Spanish as the Luiseño, whose territory
32 is thought to have composed some 1,500 square miles of coastal and interior southern California (White
33 1963). The Luiseño speak a language that is placed within the Cupan group of the Takic family of the
34 Uto-Aztecan stock also known as Southern California Shoshonean (Kroeber 1925:574). Kroeber (1925)
35 estimated a population of only about 5,000 precontact Luiseño. White (1963) and Shipek (1977)
36 estimated that, at the time of Spanish contact, there were on the order of 50 Luiseño rancherias with an
37 average population of some 200 people, for a total Luiseño population of about 10,000.

38 **3.4.2.2 History**

39 **Early History of MCB Camp Pendleton Area**

40 The area that is now MCB Camp Pendleton was first entered by Europeans on July 20, 1769, as the
41 members of the Portola expedition descended into the valley of the Santa Margarita River during their
42 journey north to Monterey. Proceeding along an inland route, the expedition described native villages at
43 Santa Margarita, Las Pulgas, and Cristianitos Canyon. The earliest permanent structures on MCB Camp
44 Pendleton are described in an 1827 mission report as a small adobe at what is now the Santa Margarita
45 Ranch House and a mission estancia at Las Flores (Reddy and Byrd 1997).

1 The original Mexican owners of the land that was to become MCB Camp Pendleton were Pio and Andres
2 Pico, who acquired the Rancho San Onofre and Rancho Santa Margarita in 1841. Las Flores, which had
3 been one of the few Indian pueblos established by the Mexican government, was acquired by the Pico
4 brothers in 1844, thus creating the Rancho Santa Margarita y Las Flores. By 1862, the Picos had fallen
5 into financial difficulties and sold part of the rancho to their brother-in-law, Juan Forster, to avoid losing
6 it to creditors. Forster, after undertaking a number of improvements, died in 1882 and the ranch
7 eventually was transferred to James C. Flood and Richard O’Neill. The O’Neill family held the property
8 until it was acquired by the USMC in 1942.

9 **Military Development at MCB Camp Pendleton**

10 Since its establishment in 1942, major development at MCB Camp Pendleton has supported its mission as
11 an amphibious training facility. The history of this development is described in a Basewide inventory and
12 evaluation of structures reported by JRP Historical Consulting Services (JRP 2000), which provides both
13 a historic context for the military period and National Register of Historic Places evaluations of individual
14 structures. The JRP study identifies six major periods of construction as a thematic structure for the
15 evaluations: World War II (1942–1945); post-World War II (1946–1949); Korean War (1950–1953),
16 post-Korean War (1954–1962), the Vietnam era (1963–1975), and the end of the Cold War (1976–1989).
17 Major development activities on MCB Camp Pendleton during these periods as described by JRP (2000)
18 are briefly summarized below.

19 *World War II*

20 Most initial activity in the early months of World War II involved the development of support facilities
21 for planned construction. Placed mainly in the “Mainside” area (11–17 Areas [Headquarters] and 18 Area
22 [Golf Course]), these included warehouses, a lumberyard, a mill, a steelyard, a quarry, and barracks for
23 workers. Major military facilities constructed at this time included a rifle qualification range at the 25
24 Area (Vado Del Rio), tent camps at the Mainside area, and construction of the boat basin in the 21 Area
25 (Del Mar). Major military operations included the arrival of the 9th, 4th, and 5th Marines, all quartered at
26 Mainside.

27 *Post-World War II*

28 During this time Major General Graves B. Erskine initiated a number of developments designed to create
29 a more permanent facility at MCB Camp Pendleton. Major examples include the construction of the
30 beach club at San Onofre, a commissary, a golf course, a library, and the Base rodeo grounds.

31 *Korean War*

32 A major build-up of personnel and facilities took place during this period. For example, the first
33 permanent barracks with mess hall and administration building was constructed in the 22 Area (Chappo),
34 and field training camps were established at the 62 Area (San Mateo), 43 Area (Las Pulgas), 53 Area
35 (Horno), and 33 Area (Santa Margarita).

36 *Post-Korean War*

37 Due to legal disputes over water rights along the Santa Margarita River, relatively limited funding was
38 available for construction on MCB Camp Pendleton during the post-Korean War years. Significant
39 construction took place in 1961, however, with the construction of eight permanent bachelor enlisted
40 quarters, two mess halls, a training school, two administration buildings, and 400 units of housing within
41 and near the 21 Area (Del Mar). Development of the Edson rifle range and supporting facilities was also
42 conducted at this time.

1 Vietnam

2 A variety of facilities were constructed during the Vietnam conflict. Training schools for jungle warfare
3 were established near the 41 Area (Las Pulgas), 52 Area (School of Infantry), 27 Area (Naval Hospital),
4 and Piedra de Lumbre Canyon (in the 43 Area [Las Pulgas]). A new Combat Town in the 52 Area (School
5 of Infantry) was also built. Other facilities constructed at this time included an exchange complex in the
6 11 Area (Headquarters), regimental headquarters at the 62 Area (San Mateo) and 53 Area (Horno),
7 bachelor officer's quarters, housing in the 17 Area near the San Luis Rey gate, a new brig, new housing at
8 the 52 Area (San Onofre) and Wire Mountain section of the 20 Area, and the 31B Area (Marine Corps
9 Tactical Systems Support Facility) at Stuart Mesa.

10 End of Cold War

11 Development at MCB Camp Pendleton during this period has largely involved a major upgrade of former
12 World War II facilities. These have included the construction of a variety of housing units in numerous
13 areas and various improvements to water, sewer, and utility systems. Additional construction included a
14 dining facility in the 14 Area (Headquarters), a dental clinic at the 52 Area (School of Infantry), a
15 dispensary at the 31A Area (Edson Range), a new exchange warehouse in the 11 Area (Headquarters),
16 refurbishing the Commissioned Officers' Mess in the 17 Area (Headquarters), a new chapel, a data
17 processing center in the 11 Area (Headquarters), new vehicle maintenance facilities, a new flight
18 simulator facility, an enlisted men's club in the 33 Area (Margarita), and conversion of the brig to a long-
19 term confinement facility.

20 3.4.2.3 Existing Conditions

21 No National Register of Historic Places-listed shipwrecks are located in or near the project area (National
22 Park Service 2013). A review of shipwreck records (Army 2001) and databases (California State Lands
23 Commission 2013) did not identify any shipwrecks within or adjacent to the project area.

24 Table 3.4-1 lists the terrestrial cultural resources located within the APE, and includes a summary of
25 potential impacts and an assessment of the site's eligibility for inclusion in the National Register of
26 Historic Places. As shown in Table 3.4-1, there are 48 documented cultural resources located within the
27 APE. Of these sites, 47 are situated near Red, Gold and Green beaches, or within the Sierra Training
28 Area. CA-SDI-10724 is located near White Beach, and is therefore part of the APE for Alternative 2 only.
29 The California State Historic Preservation Office consultation initiation letter (MCB Camp Pendleton
30 2014b; Appendix A) provides a detailed description of each of the cultural resources listed in this table,
31 including the key findings of field investigations and the basis of the eligibility determination. Project
32 activities within the Sierra Training Area are covered by previous NEPA documentation (MCB Camp
33 Pendleton 2011d and 2014a), and by previous consultations by MCB Camp Pendleton with the California
34 State Historic Preservation Office.

Table 3.4-1. Documented Cultural Resources within and adjacent to the APE

| No. | Site Identification Number | Type | Location | Potential Effects | National Register of Historic Places Eligibility Status |
|-----|----------------------------|--------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 1. | CA-ORA-22 (CA-SDI-13071) | Part of San Mateo Archaeological District ¹ | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | District (1981) Eligible |
| 2. | CA-SDI-811 | Habitation | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Eligible |
| 3. | CA-SDI-812/H | Habitation/ Historic | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Listed |
| 4. | CA-SDI-1074 | Habitation | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | South portion Eligible |
| 5. | CA-SDI-1075 | Habitation | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | South portion Eligible |
| 6. | CA-SDI-1313/14791 | Habitation | In APE (on dirt and paved roads) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Eligible |
| 7. | CA-SDI-4282 | Part of San Mateo Archaeological District ¹ | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | District (1981) Eligible |
| 8. | CA-SDI-4411 | Habitation | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Eligible |
| 9. | CA-SDI-4412 | Habitation | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 10. | CA-SDI-4535 | Part of San Mateo Archaeological District ¹ | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | District (1981) Eligible |
| 11. | CA-SDI-4538A/B | Habitation | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Eligible |

| No. | Site Identification Number | Type | Location | Potential Effects | National Register of Historic Places Eligibility Status |
|-----|----------------------------|-----------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 12. | CA-SDI-8435 | Habitation; part of San Mateo Archaeological District ¹ | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | District (1981) Eligible |
| 13. | CA-SDI-10723 | Habitation | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Eligible (Hale and Becker 2006) |
| 14. | CA-SDI-10724 ² | Shell midden w/groundstone | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 15. | CA-SDI-10726 | Habitation | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Eligible (Byrd 2003) |
| 16. | CA-SDI-10731 | Habitation | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Eligible |
| 17. | CA-SDI-12576H | Historic Military dump | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Ineligible |
| 18. | CA-SDI-13322 | Habitation | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Re-evaluation is under way; assumed eligible |
| 19. | CA-SDI-13323/H | Historic | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Ineligible |
| 20. | CA-SDI-13324 | Habitation | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Eligible |
| 21. | CA-SDI-13325 | Habitation | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Eligible |

| No. | Site Identification Number | Type | Location | Potential Effects | National Register of Historic Places Eligibility Status |
|-----|----------------------------|-----------------------------|----------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 22. | CA-SDI-14006H | Historic Road | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Eligible |
| 23. | CA-SDI-14255 | Shell and Artifacts scatter | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Ineligible |
| 24. | CA-SDI-14433/14482/14514H | Artifact and shell scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Reddy 2004) |
| 25. | CA-SDI-14491 | Shell scatter | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 26. | CA-SDI-14495 | Shellfish scatter | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Reddy 1999) |
| 27. | CA-SDI-14504 | Artifact scatter | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Eligible (York 2009) |
| 28. | CA-SDI-14505 | Shell scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Reddy 1999) |
| 29. | CA-SDI-14506 | Shell scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Reddy 1999) |
| 30. | CA-SDI-14507H | Historic glass scatter | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 31. | CA-SDI-14508 | Shell scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Reddy 1999) |
| 32. | CA-SDI-14509 | Shell scatter | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |

| No. | Site Identification Number | Type | Location | Potential Effects | National Register of Historic Places Eligibility Status |
|-----|----------------------------|----------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 33. | CA-SDI-14510 | Shell scatter | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 34. | CA-SDI-14511 | Shell scatter | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 35. | CA-SDI-14513 | Shell scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 36. | CA-SDI-14514 | Shell scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Hale 2005) |
| 37. | CA-SDI-14516 | Shell scatter | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Ineligible (Reddy 1999) |
| 38. | CA-SDI-15122 | Habitation | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Ineligible |
| 39. | CA-SDI-15123 | Artifact scatter | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Ineligible |
| 40. | CA-SDI-15254 | Shell and artifact scatter | In APE (on dirt road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Determined Eligible (Byrd 1996 and 1999) |
| 41. | CA-SDI-15840 | Artifact and shell scatter | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 42. | CA-SDI-15913 | Artifact and shell scatter | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |
| 43. | CA-SDI-16283 | Habitation/ Burials (site mostly removed) | Remnant in APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Eligible |

| No. | Site Identification Number | Type | Location | Potential Effects | National Register of Historic Places Eligibility Status |
|-----|----------------------------|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 44. | CA-SDI-17544/H | Lithic scatter/ historic trash scatter | In APE (on paved road) | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Ineligible |
| 45. | CA-SDI-19381 | Artifact scatter | In APE (in built environment) | Minimal; build environment | Ineligible |
| 46. | CA-SDI-20782 | Shell scatter/ fire-affected rock | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Eligible (York 2013) |
| 47. | CA-SDI-20979 | Shell concentration | In APE (in Sierra Training Area) | Minimal; subject to Sierra Training Area avoidance measures and conditions | Eligible |
| 48. | CA-SDI-21060 | Lithic, ceramic, shell | Adjacent | Minimal; proposed activities would stay within access roads per MCIWEST-MCBCAMPENO 3500.1 | Not previously evaluated; assumed eligible |

Notes: APE = Area of Potential Effects

¹ The San Mateo Archaeological District consists of four sites (i.e., CA-ORA-22 [CA-SDI-13071], CA-SDI-4282, CA-SDI-4535, and CA-SDI-8435). All four sites are either within or adjacent to the APE.

² CA-SDI-10724 is located adjacent to White Beach. All other cultural resources listed in this table are situated near Green, Red, and Gold beaches, or within the Sierra Training Area or along access roads.

Source: MCB Camp Pendleton 2014b

1 **3.4.3 ENVIRONMENTAL CONSEQUENCES**

2 **3.4.3.1 No Action Alternative**

3 Under the No Action Alternative, the continuation of amphibious training exercises in the marine
 4 environment would not affect cultural resources, as no such resources currently exist in the marine
 5 environment portion of the project area. With respect to the terrestrial environment, 47 of the 48 cultural
 6 resources listed in Table 3.4-1 are located either within or adjacent to the APE. The sole exception, CA-
 7 SDI-10724, is located near White Beach, and therefore outside the APE (and the 100 foot [33 m] area of
 8 concern) for the No Action Alternative.

9 Under the No Action Alternative, vehicular transport of equipment and cargo in terrestrial areas would
 10 continue to be restricted to existing roads, pathways, and routes, and previously approved training areas.
 11 All participants in amphibious training exercises would continue to comply with Marine Corps
 12 Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures
 13 (MCIWEST-MCBCAMPENO 3500.1). Activities in the Sierra Training Area would also be subject to all
 14 applicable mitigation measures (including the 2011 EA [MCB Camp Pendleton 2011a], the 2014
 15 Supplemental EA for the Establishment of Sierra Training Area [MCB Camp Pendleton 2014a], and any
 16 additional measures that may arise from on-going consultation with the State Historic Preservation Office
 17 for the Sierra Training Area project) to avoid impacts to cultural resources. Measures from the two Sierra
 18 Training Area NEPA documents have been incorporated into Table 3.0-1.

1 All exercise training sites, access routes, bivouacking, messing, laydown and construction activities
2 requiring grading, grubbing, excavation, and other soil disturbing activity are restricted from locations
3 that have been defined by Environmental Security as environmentally sensitive areas (including cultural
4 resources) to ensure avoidance of cultural resource impacts. Under the No Action Alternative, amphibious
5 training exercises would continue to abide by this general rule. Based upon the nature of the existing
6 amphibious training exercises (specifically with regard to their short duration and limited amount of
7 ground disturbance), and with implementation of the referenced mitigation measures, the No Action
8 Alternative would have no adverse effect on cultural resources at MCB Camp Pendleton.

9 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
10 no significant impacts to cultural resources with the continued implementation of the No Action
11 Alternative.

12 **3.4.3.2 Alternative 1**

13 As is the case for the No Action Alternative, 47 cultural resources are located within or adjacent to the
14 APE for Alternative 1. This alternative would be subject to the same mitigation measures that are
15 described for the No Action Alternative; amphibious training exercises would continue to be restricted
16 from environmentally sensitive areas.

17 Although Alternative 1 would increase the annual training tempo, no incremental increase in impacts
18 would occur given that exercises would not be allowed in sensitive areas and would be subject to other
19 mitigation measures, including compliance with MCIWEST-MCBCAMPENO 3500.1, as described in
20 Table 3.0-1. The introduction and use of future emerging platforms and technologies and the performing
21 of at-sea refueling would not impact cultural resources, as no such resources are located in the marine
22 environment. Based upon the nature of the proposed amphibious training exercises (specifically with
23 regard to their short duration and limited amount of ground disturbance), and with implementation of the
24 referenced mitigation measures, Alternative 1 would have no adverse effect on cultural resources at MCB
25 Camp Pendleton.

26 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
27 no significant impacts to cultural resources from implementation of Alternative 1.

28 **3.4.3.3 Alternative 2**

29 Under Alternative 2, the increased geographic scope of amphibious training would result in one additional
30 cultural resource (i.e., CA-SDI-10724) within the APE. Alternative 2 would be subject to the same
31 mitigation measures as presented for the No Action Alternative and Alternative 1. As a result, proposed
32 amphibious training exercises at White Beach would not disturb CA-SDI-10724 or other sites located
33 within the APE. Based upon the nature of the proposed amphibious training exercises (specifically with
34 regard to their short duration and limited amount of ground disturbance), and with implementation of the
35 referenced mitigation measures, Alternative 2 would have no adverse effect on cultural resources at MCB
36 Camp Pendleton.

37 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
38 no significant impacts to cultural resources from implementation of Alternative 2. MCB Camp Pendleton
39 has requested concurrence from the State Historic Preservation Office with this finding of no adverse
40 effect (Appendix A).

3.5 LAND USE

1 3.5.1 DEFINITION OF RESOURCE

2 For the purposes of this analysis, land use is defined as the natural conditions and/or human-modified
3 activities occurring at a particular location. Human-modified land use categories include residential,
4 commercial, industrial, transportation, communications and utilities, agricultural, institutional,
5 recreational, and other developed use areas. Management plans and zoning regulations are used to
6 determine the type and extent of land use allowable in specific areas and are often intended to protect
7 specifically designated or environmentally sensitive areas.

8 Recreational facilities are defined as those amenities that provide for rest, relaxation, exercise, education,
9 or leisure activities that may enhance a person's quality of life. Recreational facilities include, but are not
10 limited to parks, beaches, trails, campgrounds, playgrounds, and athletic fields. Recreational activities
11 may include hiking, boating, picnicking, swimming, or surfing.

12 3.5.2 AFFECTED ENVIRONMENT

13 Implementation of the alternatives would occur in areas currently identified as training areas; there would
14 be no change to existing land use designations. Furthermore, amphibious training exercises would be
15 consistent with the designation of MCB Camp Pendleton as an installation that supports amphibious
16 training. Therefore, impacts to land use from implementation of the alternatives would be non-existent
17 and are not discussed further. The balance of this section focuses on potential impacts to recreation, a
18 subset of the land use resource area.

19 The State Lease Areas (shown on Figure 2-16) contain publically accessible recreational facilities located
20 within the boundaries of MCB Camp Pendleton. These areas were established under the terms of the 1971
21 Lease Agreement between the federal government and the California Department of Parks and Recreation
22 (*Agreement of Lease between the State of California Department of Parks and Recreation and the United*
23 *States of America* [USA 1971]). The 1971 Lease Agreement covers San Onofre State Beach, including
24 Trestles Beach, Surf Beach, San Onofre Bluffs and San Mateo Campground (Figure 3.5-1).

25 As provided in Part II, Article L of the 1971 Lease Agreement, the federal government is required to
26 provide the California Department of Parks and Recreation prior notification when using portions of the
27 leased property for training. The 1971 Lease Agreement provides for five days' notice, except where
28 military necessity requires a shorter clearance period, in which case no less than 48 hours' notice may be
29 given. The 1971 Lease Agreement provides for the use of the leased area for military training activities
30 "at all reasonable times" (USA 1971).

31 3.5.2.1 Marine Environment

32 Existing recreational activities in marine areas primarily include surfing, swimming, and boating. There
33 are seven recognized surf breaks that are accessible to the public in accordance with the terms of the 1971
34 Lease Agreement (Figure 3.5-1). These surfing areas are popular in the surfing community, with up to
35 400,000 annual visitors and up to hundreds of surfers in the water at any given time during the summer.
36 Professional surfing events are regularly held at Trestles Beach. For example, the Association of Surfing
37 Professionals holds a contest each year during mid-September, with crowds of approximately 10,000
38 people (Association of Surfing Professionals 2013). There are also numerous amateur and scholastic
39 surfing events held along Trestles Beach any given year (California Department of Parks and Recreation
40 2013).

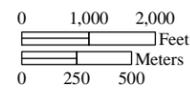


Figure 3.5-1
Public Recreation Locations in the Green Beach and State Lease Areas



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1 San Onofre Bluffs, another component of the San Onofre State Beach located south of the San Onofre
2 Nuclear Generating Station, provides ocean access for surfers, swimmers and others. Access to San
3 Onofre State Beach is via paved and dirt roads in the southern portion, and via foot and bike in the
4 northern (i.e., “Trestles Beach” portion).

5 There is no public access, and therefore no existing public recreation activities in the marine areas
6 immediately adjacent to Red, Gold, and White beaches. The Del Mar Marina is a pleasure boat facility
7 located at the Del Mar Boat Basin and operated by the Marine Corps Community Services for DoD-
8 affiliated persons. The marina provides slip rentals, rental boats, sailing instruction/certification, and
9 ocean sailing cruises (Marine Corps Community Services 2013). Oceanside Harbor is located adjacent to
10 the Del Mar Marina, and has 1,000 boat slips and a yacht club (City of Oceanside 2013). The Del Mar
11 Marina and Oceanside Harbor share the same channel for ocean access.

12 **3.5.2.2 Terrestrial Environment**

13 San Onofre State Beach is located within the boundaries of MCB Camp Pendleton and is managed by the
14 California Department of Parks and Recreation. San Onofre State Beach provides hiking, jogging,
15 picnicking, and camping opportunities. Annual attendance at San Onofre State Beach is estimated to be
16 more than 2 million people (California Department of Parks and Recreation 2010).

17 San Mateo Campground is also a component of San Onofre State Beach, and is situated along the
18 northern boundary of MCB Camp Pendleton. Access is provided via Cristianitos Road. San Mateo
19 Campground is open year-round and provides electricity, restrooms, and showers in addition to picnic
20 benches, fire pits, and barbecues. San Mateo Campground accommodates 156 campsites, with a
21 maximum allotment of 8 persons per site. Each site can be reserved for a maximum of 15 consecutive
22 days (USMC 2013a). The San Mateo Campground was closed for 15 consecutive days in June 2013 to
23 accommodate Dawn Blitz 2013; before Dawn Blitz 2013, the last military-related temporary closure of
24 the San Mateo Campground was in 2000.

25 San Onofre Beach⁷ is a recreational facility operated by Marine Corps Community Services that is
26 located adjacent to Green Beach, between Surf Beach and San Onofre Bluffs (see Figure 3.5-1). San
27 Onofre Beach provides beach cottages, campsites, and recreational vehicle/camper utility hook-ups to
28 DoD-affiliated persons. San Onofre Beach is situated adjacent to the Church surf break, and aquatic
29 activities are authorized only when a lifeguard is present. Access is provided via Beach Club Road and
30 Old Pacific Highway.

31 An existing bicycle route, which is open to the public, extends from Cristianitos Road to Vandegrift
32 Boulevard, and passes through San Onofre State Beach (see Figure 3.5-1). There are no existing public
33 recreational activities at Red, Gold, or White beaches.

⁷ Although its name is similar to San Onofre State Beach, San Onofre Beach is operated by Marine Corps Community Services, is not a component of the State Lease Areas, and is therefore not affiliated with San Onofre State Beach.

1 **3.5.3 ENVIRONMENTAL CONSEQUENCES**

2 **3.5.3.1 No Action Alternative**

3 The No Action Alternative would involve the continuation of existing amphibious training exercises
4 described in Section 2.2. The bike path running the length of MCB Camp Pendleton would continue to be
5 subject to closure during certain exercise elements. Amphibious training exercises at Green Beach and the
6 State Lease Area beaches would continue to necessitate the temporary closure of coastal elements of San
7 Onofre State Beach (i.e., Trestles Beach, Surf Beach and San Onofre Bluffs and potentially
8 pedestrian/bike trails leading to the beaches) and the Marine Corps Community Services San Onofre
9 Beach facility, resulting in the temporary displacement of aquatic and terrestrial recreation in these areas.
10 The temporary closures of State Lease Area beaches and associated pathways would continue to last
11 approximately half a day (i.e., four to six hours), but could on occasion last as long as several consecutive
12 days, depending on the type and duration of the exercise activity in the area. These effects would continue
13 to be minimized through advance notification of closure to the California Department of Parks and
14 Recreation, in accordance with the 1971 Lease Agreement.

15 Under the No Action Alternative, the San Mateo Campground would continue to be subject to closure for
16 up to 15 consecutive days each calendar year. However, there would be years when amphibious training
17 exercises would not need to use the San Mateo Campground and, as such, there would be no closure.

18 When planning information supports doing so, exercise proponents would strive to notify the California
19 Department of Parks and Recreation at least six months' in advance of an exercise that would require the
20 use (and therefore temporary closure) of the San Mateo Campground. Affected campers would continue
21 to have the option of using alternative campsites in the region. Several alternative recreation sites are
22 located near the project area. Some of these facilities include San Clemente State Beach, Salt Creek
23 Beach, Doheny State Beach, Oceanside Pier, and South Carlsbad State Beach. These facilities offer
24 similar recreation opportunities, thus lessening the degree of the impact.

25 While the 1971 Lease Agreement provides for five days advance notice to the California Department of
26 Parks and Recreation for closures, MCB Camp Pendleton would strive to provide the California
27 Department of Parks and Recreation advance notice (i.e., greater than five days), when possible, for any
28 closures of State Lease Areas. Exercise proponents would coordinate (via the California Department of
29 Parks and Recreation and the California Coastal Commission) in advance to minimize impacts to
30 organized surfing events that are regularly held at Trestles.

31 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
32 no significant impacts to land use with the continued implementation of the No Action Alternative.

33 **3.5.3.2 Alternative 1**

34 Implementation of Alternative 1 would result in an increase in the number of temporary closures of
35 certain segments of marine and terrestrial recreation areas in and adjacent to Green Beach and State Lease
36 Area beaches. There would be an increase in the closure of beach areas and beach access routes to San
37 Onofre State Beach and the Marine Corps Community Services San Onofre Beach facility, temporarily
38 displacing marine and beach recreation activities. Furthermore, the bike path would be subject to
39 temporary closure more often, due to the proposed increase in amphibious training tempo. Consistent
40 with the 1971 Lease Agreement, the DoD would strive to provide advance notice of activities
41 necessitating park and/or beach closure so that potential users may make alternate plans.

1 Under Alternative 1, the San Mateo Campground could be closed for approximately 30 days each
2 calendar year. The closures of the San Mateo Campground would be dictated by training requirements,
3 and could be associated with one, or more than one exercise each calendar year. For example, the
4 approximately 30 cumulative days of campground closures could result from the combination of exercises
5 occurring over several days on multiple occasions spread throughout the year, from one or two exercises
6 lasting up to several consecutive weeks, or a combination thereof. Also, as is the case under the No
7 Action Alternative, there could be some years in which amphibious training exercises would not need to
8 use the San Mateo Campground, and as such, there would be no campground closures in those years.

9 Potential campground closure windows would be communicated by the exercise proponent to the
10 California Department of Parks and Recreation as soon as information supports doing so. Then, as the
11 exercise draws closer and the training days become firm, the actual closure days would be re-
12 communicated. This process would likely result in previously “closed” days (i.e., as identified in the
13 initially communicated campground “closure window”) becoming available to campers. In addition, as
14 would be the case for the No Action Alternative, the availability of alternative camping facilities near the
15 Proposed Action would accommodate some portion of any displaced campers, which would lessen the
16 degree of Alternative 1’s temporary impact to recreation.

17 Minimizing campground closure during peak recreational season would be one of many planning
18 considerations taken into account when scheduling exercises. Mission requirements (training in all
19 seasons, all weather states) are a top priority. Scheduling is also based on funding and force operational
20 tempo and availability. Accordingly, campground closures during peak recreational season cannot be
21 completely avoided but would be minimized to the extent feasible and consistent with mission
22 requirements.

23 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
24 no significant impacts to land use from implementation of Alternative 1.

25 **3.5.3.3 Alternative 2**

26 Under Alternative 2, the increased geographic scope of amphibious training would result in similar
27 impacts as presented for Alternative 1. Under Alternative 2, amphibious training exercises would be
28 expanded to include White Beach. There are no recreational facilities adjacent to White Beach, and no
29 direct public access exists. Proposed amphibious training exercises at White Beach could potentially alter
30 the course of recreational boats, if they came too close to the exercise, but boaters would still be able to
31 transit the area.

32 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
33 no significant impacts to land use from implementation of Alternative 2.

34 **3.6 AIR QUALITY**

35 **3.6.1 DEFINITION OF RESOURCE**

36 Existing air quality at a given location can be described by the concentrations of various pollutants in the
37 atmosphere. The main pollutants of concern considered in this air quality analysis include volatile organic
38 compounds (VOCs), ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxide (SO_x)
39 particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter (PM₁₀), and
40 particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}). Although VOCs or NO_x (other
41 than nitrogen dioxide [NO₂]) have no established ambient air quality standards, they are important as
precursors to O₃ formation. These criteria pollutants have national and/or state ambient air quality

1 standards. The U.S. Environmental Protection Agency (USEPA) establishes the National Ambient Air
 2 Quality Standards (NAAQS), while the California Air Resources Board (CARB) establishes the state
 3 standards, termed the California Ambient Air Quality Standards (CAAQS) (CARB 2013a). The San
 4 Diego Air Pollution Control District has been delegated the authority to enforce the federal and state
 5 standards in the project area. Table 3.6-1 provides the NAAQS and CAAQS as of 2013.

Table 3.6-1. California and National Ambient Air Quality Standards

| Pollutant | Averaging Time | California Standards | National Standards ¹ | |
|-------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|
| | | | Primary ^{2,3} | Secondary ^{3,4} |
| O ₃ | 1-hour | 0.09 ppm (180 µg/m ³) | — | Same as primary |
| | 8-hour | 0.070 ppm (137 µg/m ³) | 0.075 ppm (147 µg/m ³) | Same as primary |
| CO | 1-hour | 20 ppm (23 mg/m ³) | 35 ppm (40 mg/m ³) | — |
| | 8-hour | 9 ppm (10 mg/m ³) | 9 ppm (10 mg/m ³) | — |
| NO ₂ | 1-hour | 0.18 ppm (339 µg/m ³) | 0.10 ppm (188 µg/m ³) | — |
| | Annual | 0.030 ppm (57 µg/m ³) | 0.053 ppm (100 µg/m ³) | Same as primary |
| SO ₂ | 1-hour | 0.25 ppm (655 µg/m ³) | 0.075 ppm (105 µg/m ³) | — |
| | 3-hour | — | — | 0.5 ppm (1,300 µg/m ³) |
| PM ₁₀ | 24-hour | 50 µg/m ³ | 150 µg/m ³ | Same as primary |
| | Annual | 20 µg/m ³ | — | Same as primary |
| PM _{2.5} | 24-hour | — | 35 µg/m ³ | Same as primary |
| | Annual | 12 µg/m ³ | 15 µg/m ³ | Same as primary |
| Lead | 30-day average | 1.5 µg/m ³ | — | — |
| | Rolling 3-month average | — | 0.15 µg/m ³ | Same as primary |
| | Calendar Quarter | — | 1.5 µg/m ³ | Same as primary |
| Hydrogen Sulfide | 1-hour | 0.03 ppm (42 µg/m ³) | No National Standards | |
| Vinyl Chloride | 24-hour | 0.01 ppm (26 µg/m ³) | No National Standards | |
| Visibility Reducing Particles | 8-hour | In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%. Measurement in accordance with CARB Method V. | No National Standards | |

Notes: ¹ Standards other than 1-hour O₃, 24-hour PM₁₀, 24-hour PM_{2.5}, and those based on annual averages cannot be exceeded more than once a year.

² Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

³ Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

⁴ Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse pollutant effects. µg/m³ = micrograms per cubic meter; ppm = parts per million.

Source: CARB 2013a.

6 Section 176(c) of the CAA, as articulated in the USEPA General Conformity Rule, states that a federal
 7 agency cannot issue a permit or support an activity unless the agency determines that the action would
 8 conform to the most recent USEPA-approved State Implementation Plan. This means that projects using
 9 federal funds or requiring federal approval in nonattainment or maintenance areas must not: 1) cause or
 10 contribute to any new violation of a NAAQS; 2) increase the frequency or severity of any existing
 11 violation; or 3) delay the timely attainment of any standard, interim emission reduction, or other
 12 milestone. Certain actions are exempt from conformity determinations if the projected emission rates
 13 would be less than specified emission rate thresholds, known as *de minimis* thresholds. The applicable *de*

1 *minimis* levels for the project area are listed in Table 3.6-2.

Table 3.6-2. Applicable Criteria Pollutant *de minimis* Levels (tons/year)

| VOCs ¹ | NO _x ¹ | CO ² | SO _x | PM ₁₀ | PM _{2.5} |
|-------------------|------------------------------|-----------------|-----------------|------------------|-------------------|
| 100 | 100 | 100 | N/A | N/A | N/A |

Notes: ¹ The San Diego Air Basin is a basic nonattainment area for the 8-hour federal and state O₃ standard; VOCs and NO_x are precursors to the formation of O₃.

² The San Diego Air Basin is a maintenance area for CO.

N/A = not applicable because the San Diego Air Basin is currently in attainment of the NAAQS for these criteria pollutants.

Sources: San Diego Air Pollution Control District 2013, USEPA 2013a.

2 Greenhouse gases (GHGs) are gases that trap heat in the atmosphere by absorbing infrared radiation. The
 3 most common GHGs emitted from natural processes and human activities include carbon dioxide (CO₂),
 4 methane (CH₄), and nitrous oxide (N₂O). Each GHG is assigned a global warming potential. The global
 5 warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming
 6 potential rating system is standardized to CO₂, which has a value of one. For example, CH₄ has a global
 7 warming potential of 21, which means that CH₄ has a global warming effect 21 times greater than CO₂ on
 8 an equal-mass basis (Intergovernmental Panel on Climate Change 2007). To simplify GHG analyses, total
 9 GHG emissions from a source are often expressed as a CO₂ equivalent (CO₂e). The CO₂e is calculated by
 10 multiplying the emissions of each GHG by its global warming potential and adding the results together to
 11 produce a single, combined emission rate representing all GHGs. While CH₄ and N₂O have much higher
 12 global warming potentials than CO₂, CO₂ is emitted in such higher quantities that CO₂ is the
 13 overwhelming contributor to CO₂e from both natural processes and human activities.

14 Federal agencies on a national scale address emissions of GHGs by reporting and meeting reductions
 15 mandated in federal laws, EOs, and agency policies. The most recent of these are EOs 13423 and 13514
 16 and the *USEPA Final Mandatory Reporting of Greenhouse Gases Rule*. Several states have promulgated
 17 laws as a means of reducing statewide levels of GHG emissions. In particular, the California Global
 18 Warming Solutions Act of 2006 (AB32) directs the State of California to reduce statewide GHG
 19 emissions to 1990 levels by the year 2020. Groups of states also have formed regionally based collectives
 20 (such as the Western Climate Initiative) to jointly address GHG pollutants.

21 The potential effects of GHG emissions are by nature global and cumulative, as individual sources of
 22 GHG emissions are not large enough to have any appreciable effect on climate changes. Therefore, the
 23 potential impacts of GHG emissions are discussed in the context of cumulative impacts in Chapter 4.

24 **3.6.2 AFFECTED ENVIRONMENT**

25 **3.6.2.1 Baseline Air Quality**

26 Representative air quality data for MCB Camp Pendleton for the period 2010-2012 are shown in Table
 27 3.6-3. The USEPA designates all areas of the U.S. as having air quality better than or equal to
 28 (attainment) or worse than (nonattainment) the NAAQS. The criteria for nonattainment designation vary
 29 by pollutant. An area is in nonattainment for O₃ if its NAAQS has been exceeded more than three
 30 discontinuous times in three years and an area is generally in nonattainment for any other pollutant if its
 31 NAAQS have been exceeded more than once per year. Former nonattainment areas that have attained the
 32 NAAQS are designated as maintenance areas. The San Diego Air Basin is in nonattainment of the State
 33 O₃, PM₁₀ and PM_{2.5} standards (CARB 2013b, USEPA 2013a). The San Diego Air Basin is a maintenance
 34 area for CO, and is in attainment for SO_x and NO_x.

35 Emission sources associated with the existing use of MCB Camp Pendleton include civilian and military
 36 personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, small

- 1 stationary sources, and on-going construction and training exercises. Emissions associated with existing
 2 and on-going training exercises result from the use of marine vessels, ground vehicles, and aircraft used
 3 during training exercises, and vehicles driving on unpaved roads generating fugitive dust.

Table 3.6-3. Representative Air Quality Data for MCB Camp Pendleton (2010-2012)

| Air Quality Indicator | 2010 | 2011 | 2012 |
|----------------------------------------------------------------------------------------------------------|-------|-------|-------|
| Ozone (O₃)⁽¹⁾ | | | |
| Peak 8-hour value (ppm) | 0.079 | 0.071 | 0.081 |
| Days above federal standard (0.075 ppm) ^(2, 6) | 1 | 0 | 1 |
| Days above state standard (0.070 ppm) | 1 | 2 | 1 |
| Carbon monoxide (CO)⁽³⁾ | | | |
| Peak 8-hour value (ppm) | 2.17 | 2.44 | 1.81 |
| Days above federal standard (9.0 ppm) | 0 | 0 | 0 |
| Days above state standard (9.0 ppm) | 0 | 0 | 0 |
| Particulate matter less than or equal to 10 microns in diameter (PM₁₀)⁽⁴⁾ | | | |
| Peak 24-hour value (µg/m ³) | 32.0 | 47.0 | 22.0 |
| Days above federal standard (150 µg/m ³) | 0 | 0 | 0 |
| Days above state standard (50 µg/m ³) | 0 | 0 | 0 |
| Particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5})⁽⁴⁾ | | | |
| Peak 24-hour value (µg/m ³) | 18.7 | 29.9 | 20.0 |
| Days above federal/state standard (35 µg/m ³) ⁽⁵⁾ | 0 | 0 | 0 |
| Sulfur Dioxide (SO₂)⁽³⁾ | | | |
| Peak 24-hour value (ppm) | 0.002 | 0.003 | n/a |
| Days above federal standard (0.14 ppm) | 0 | 0 | n/a |
| Days above state standard (0.04 ppm) | 0 | 0 | n/a |
| Nitrogen Dioxide (NO₂)⁽¹⁾ | | | |
| Peak 1-hour value (ppm) | 0.081 | 0.066 | 0.059 |
| Days above state standard (0.18 ppm) | 0 | 0 | 0 |

Notes: ¹ Data from the Camp Pendleton Monitoring Station.

² The federal O₃ standard was revised downward in 2008 from 0.08 to 0.075 ppm.

³ Data from the San Diego-1110 Beardsley Street Monitoring Station.

⁴ Data from the San Diego-Overland Avenue Monitoring Station.

⁵ The federal PM_{2.5} standard was revised downward in 2007 from 65 to 35 µg/m³.

⁶ The federal eight-hour ozone standard was previously defined as 0.08 ppm (1 significant digit). Measurements are rounded up or down to determine compliance with the standard; therefore a measurement of 0.084 ppm is rounded to 0.08 ppm.

The 8-hour ozone ambient air quality standards are met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to the standard.

N/A = not available; ppm = parts per million; µg/m³ = micrograms per cubic meter.

Source: CARB 2013b.

4 3.6.3 ENVIRONMENTAL CONSEQUENCES

- 5 The air quality analysis estimated the magnitude of emissions that would occur from amphibious training
 6 exercises. There would be no permanent change in personnel at MCB Camp Pendleton, so the operations
 7 emissions associated with personnel would remain at existing levels. The methodology for estimating
 8 emissions involved quantifying the number and type of marine vessels, ground and tactical vehicles, and
 9 aircraft that would be used for the proposed amphibious training exercises (refer to Appendix B for
 10 calculations).

1 No construction activities are associated with amphibious training exercises. There would be some
 2 temporary erection of tents and other training logistical requirements, but these activities would be
 3 “expeditionary” in nature with little if any grading or soil disturbance. Therefore, construction emissions
 4 were not quantified in this analysis.

5 Air quality impacts from proposed amphibious training exercises would occur from combustive emissions
 6 due to the use of fossil fuel-powered equipment and fugitive dust emissions (PM₁₀ and PM_{2.5}) from the
 7 operation of equipment on exposed soil. Total emissions resulting from the training exercises have been
 8 estimated using data presented in Chapter 2, general air quality assumptions, and emission factors for the
 9 tactical and training equipment (CARB 2011; USEPA 2000). Emissions were estimated by multiplying
 10 the number of each type of equipment by the hours per day, days per year, and emission factor in pounds
 11 per day.

12 For the purposes of this air quality analysis, and for air pollutants designated as nonattainment or
 13 maintenance with the NAAQS (and therefore subject to general conformity requirements), if the
 14 estimated total of direct and indirect emissions caused by a proposed action exceeds a conformity *de*
 15 *minimis* threshold requiring a conformity determination in the San Diego Air Basin project region (100
 16 tons per year of VOCs, NO_x, and CO), further analysis would be conducted to determine whether impacts
 17 were significant. In such cases, if emissions conform to the approved State Implementation Plan, then
 18 proposed impacts would be determined to be less than significant. For those air pollutants in the San
 19 Diego Air Basin that are in attainment of the NAAQS, the general conformity requirements and
 20 thresholds do not apply.

21 For the purposes of establishing baseline conditions against which the Proposed Action can be compared,
 22 emissions were estimated for the No Action Alternative (i.e., existing conditions). To demonstrate CAA
 23 conformity, the analysis considers the net change in emissions between the existing conditions and the
 24 Proposed Action emissions.

25 **3.6.3.1 No Action Alternative**

26 Air emissions that would continue to result from continuation of the No Action Alternative (i.e., the
 27 existing conditions) are presented in Table 3.6-4. Emissions have been estimated using the average
 28 operational data presented in Table 2-2.

**Table 3.6-4. Total Estimated Annual Emissions Resulting from the No Action Alternative
 (Existing Conditions)**

| | Air Pollutant Emissions (tons per year) | | | | | |
|------------------------------------------|-----------------------------------------|--------|-----------------|-----------------|------------------|-------------------|
| | VOCs | CO | NO _x | SO ₂ | PM ₁₀ | PM _{2.5} |
| Average Annual Baseline Annual Emissions | 27.13 | 181.56 | 260.77 | 158.44 | 41.63 | 40.38 |

29 Emissions for the No Action Alternative reflect baseline levels that are currently occurring in the project
 30 area. As a result, no increase in emissions would result from continuation of the No Action Alternative.

31 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
 32 no significant impacts to air quality with the continued implementation of the No Action Alternative.

33 **3.6.3.2 Alternative 1**

34 Table 3.6-5 summarizes the estimated total annual emissions that would occur from an approximately 25
 35 percent increase in annual amphibious training exercises as proposed under Alternative 1. The emissions
 36 estimates reflect the use of up to 20 vehicles for regional transportation purposes, up to four times per

1 year. Emissions have been estimated using the average operational data presented in Table 2-5,
 2 Alternative 1. The data in Table 3.6-5 show that average annual emissions from proposed amphibious
 3 training exercises (to include the use of new platforms and technologies) under Alternative 1 would not
 4 exceed the applicable conformity *de minimis* thresholds.

5 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
 6 no significant impacts to air quality from implementation of Alternative 1.

Table 3.6-5. Total Emissions Resulting from Implementation of Alternative 1

| | Air Pollutant Emissions (tons per year) | | | | | |
|------------------------------------------------------|-----------------------------------------|--------------|-----------------|-----------------|------------------|-------------------|
| | VOCs | CO | NO _x | SO ₂ | PM ₁₀ | PM _{2.5} |
| Baseline (No Action Alternative) Emissions | 27.13 | 181.56 | 260.77 | 158.44 | 41.63 | 40.38 |
| Alternative 1 Emissions | 32.63 | 215.92 | 318.60 | 194.26 | 50.93 | 49.41 |
| Net Increase in Emissions under Alternative 1 | 5.50 | 34.36 | 57.83 | 35.82 | 9.30 | 9.03 |
| Conformity <i>de minimis</i> threshold | 100 | 100 | 100 | N/A | N/A | N/A |
| Exceeds Conformity <i>de minimis</i> threshold? | No | No | No | N/A | N/A | N/A |

Note: N/A = not applicable because the San Diego Air Basin is currently in attainment of the NAAQS for these criteria pollutants.

7 **3.6.3.3 Alternative 2**

8 The total emissions from Alternative 2 would be the same as for Alternative 1, because the same
 9 equipment mix and quantities would be used, at the same training tempo.

10 Therefore, with the application of mitigation measures (refer to Table 3.0-1), impacts to air quality would
 11 not be significant from implementation of Alternative 2.

3.7 TRANSPORTATION AND CIRCULATION

12 **3.7.1 DEFINITION OF RESOURCE**

13 For the purposes of this analysis, transportation and circulation refers to the movement of vehicles on
 14 public roadways.

15 **3.7.2 AFFECTED ENVIRONMENT**

16 The project area is crossed by two major transportation facilities: the Interstate 5 freeway and the Los
 17 Angeles-San Diego-San Luis Obispo rail corridor. Interstate 5 is a major north-south route that is used for
 18 inter-regional, interstate, and international travel and goods movement (Caltrans 2000). In the vicinity of
 19 the Proposed Action, freeway interchanges are provided at Las Pulgas Road, Basilone Road, and
 20 Cristianitos Road. Caltrans District 11 is responsible for the maintenance and operation of Interstate 5
 21 within San Diego County. The Los Angeles-San Diego-San Luis Obispo rail corridor extends 351 miles
 22 from San Diego to San Luis Obispo, and accommodates both passenger rail service (i.e., COASTER,
 23 SPRINTER, Amtrak and Metrolink) and freight rail service (i.e., Union Pacific and Burlington Northern
 24 Santa Fe) (San Diego Association of Governments 2013). The Los Angeles-San Diego-San Luis Obispo
 25 rail segment that passes through MCB Camp Pendleton is owned by the North County Transit District
 26 (MCB Camp Pendleton 2010a).

27 Public access to most areas of MCB Camp Pendleton is restricted; however, public access to San Onofre
 28 State Beach (including Trestles Beach and San Mateo Campground) is allowed under the terms of the
 29 1971 Lease Agreement. Vehicular access to the San Mateo Campground is via Cristianitos Road. Public
 30 access to Trestles Beach is via foot or bicycle; State Lifeguards and authorized persons can drive to the
 31 beach via existing paved and dirt roads. Public access to San Onofre State Beach is via a paved and dirt
 32 road as well as via foot or bicycle.

1 As discussed in Section 2.4.1.1, the Proposed Action would involve the transport of personnel and
2 materiel between the Silver Strand Training Complex and MCB Camp Pendleton (refer to Figure 2-15 for
3 the location of the Silver Strand Training Complex relative to MCB Camp Pendleton). This activity
4 would likely involve travel on State Route 75 and Interstate 5.

5 **3.7.3 ENVIRONMENTAL CONSEQUENCES**

6 **3.7.3.1 No Action Alternative**

7 The No Action Alternative does not involve site improvements, the construction of new facilities, or any
8 increase in personnel that places any additional permanent demand on the existing transportation network.
9 Amphibious training exercises in the Green Beach area would continue to result in a short term closure of
10 a short segment of Old Highway 101 and Cristianitos Road when exercise elements (vehicles) traverse
11 from Green Beach and State Lease Area beaches to inland training areas (see Figure 2-17). A checkpoint
12 would continue to be established to ensure the safe and efficient passage of vehicles during training
13 exercises. Amphibious training exercises would continue to comply with Marine Corps Installations
14 West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures (MCIWEST-
15 MCBCAMPENO 3500.1) and range clearance requirements (Base Order P3500.4F).

16 The majority of vehicles and equipment would continue to be brought ashore by amphibious operations
17 and be re-loaded onto ships and landing craft after the completion of the exercises. In some instances,
18 U.S. Army vehicles would continue to be brought in to MCB Camp Pendleton by rail. Road convoys
19 would continue to be localized and limited to segments of El Camino Real and Old Highway 101, where
20 public access is restricted, thus continuing to result in no effect on local or regional traffic circulation.

21 Vehicles would continue to move inland from Green Beach and the State Lease Area beaches, crossing
22 the North County Transit District railroad tracks at grade (just south of the San Diego/Orange County
23 line) while en route to the Sierra Training Area. There exists the continued potential for civilian traffic on
24 Interstate 5 to be affected if motorists pause to observe exercise elements (vehicles) crossing the freeway
25 via the Cristianitos Road or Basilone Road overpasses (i.e., “rubbernecking”). Compliance with Marine
26 Corps Installations West-MCB Camp Pendleton Range and Training Area Standing Operating Procedures
27 (MCIWEST-MCBCAMPENO 3500.1)⁸ would continue to minimize any potential impact to rail traffic,
28 and correspondingly, to public safety.

29 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
30 no significant impacts to transportation and circulation with the continued implementation of the No
31 Action Alternative.

32 **3.7.3.2 Alternative 1**

33 Impacts to transportation and circulation under Alternative 1 would be focused on the same areas as
34 presented under the No Action Alternative. The proposed increase in amphibious training activity would
35 increase the number of potential temporary impacts to local transportation segments; however,
36 checkpoints would be established to ensure the safe and efficient passage of vehicles, thus minimizing
37 impacts to a temporary and focused area. Training activities would comply with MCIWEST-
38 MCBCAMPENO 3500.1 to minimize impacts to rail traffic.

⁸ Specifically, paragraph 6005, item 9, which provides for the use of certified flag personnel to facilitate at-grade rail crossings.

1 Alternative 1 would involve the transport of personnel and materiel between the Silver Strand Training
2 Complex and MCB Camp Pendleton by road (likely using State Route 75 and Interstate 5). As discussed
3 in Section 2.4.1.1, transport would involve approximately 20 vehicles up to four times per year. The
4 vehicles would travel in dispersed smaller groups, if necessary, to minimize the impact to traffic during
5 peak transportation periods.

6 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
7 no significant impacts to transportation and circulation from implementation of Alternative 1.

8 **3.7.3.3 Alternative 2**

9 Transportation and circulation impacts associated with Alternative 2 are expected to be consistent with
10 those of Alternative 1. Although the geographic scope would be expanded under Alternative 2 to include
11 White Beach, public vehicular access to this area is restricted. Proposed amphibious training exercises
12 would not cause military vehicles or equipment to mix with traffic on public facilities, and no incremental
13 impact would result.

14 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
15 no significant impacts to transportation and circulation from implementation of Alternative 2.

3.8 SOCIOECONOMICS

16 **3.8.1 DEFINITION OF RESOURCE**

17 Socioeconomics considers the attributes of human, social, and economic interactions within an area.
18 Examples of economic interactions include business expenditures for goods and services; employment;
19 consumer spending; the payment of rent and user fees; business investment and expansion; land
20 development; and others.

21 **3.8.2 AFFECTED ENVIRONMENT**

22 This section focuses on the potential socioeconomic effect of temporarily closing portions of San Onofre
23 State Beach, including San Mateo Campground and nearby beach and in-water recreational facilities (i.e.,
24 Trestles Beach, Surf Beach and San Onofre Bluffs).

25 The San Mateo Campground is open year-round and has 156 campsites, of which 67 campsites have
26 electrical hook-ups for trailers and recreational vehicles. Rent for these campsites is \$60 per night. In
27 addition, there are 89 campsites that accommodate tent camping; rent for these campsites is \$30 per night.
28 Between 2010 and 2011, San Mateo Campground collected approximately \$820,000 in camping fees
29 (USMC 2013a). The summer months of June, July, and August are generally the busiest months of the
30 year at the campground. Use of the campground is relatively low during non-summer months as
31 compared to summer months. Before Dawn Blitz 2013, the last military-related temporary closure of the
32 San Mateo Campground was in 2000. The California Department of Parks and Recreation was contacted
33 to see if historical camping “percent occupancy” data were available for the San Mateo Campground;
34 however, this information is not tracked and is therefore not available (California Department of Parks
35 and Recreation 2014).

36 Beaches and in-water recreational areas within the State Lease Areas are popular in the surfing
37 community, with up to 400,000 annual visitors and up to hundreds of surfers in the water at any given
38 time during the summer (California Department of Parks and Recreation 2010). Visitors to the beach and

1 surfing areas in the State Lease Areas contribute to the local economy by buying various goods,
2 patronizing eating and drinking establishments, renting hotel rooms, and other activities.

3 **3.8.3 ENVIRONMENTAL CONSEQUENCES**

4 **3.8.3.1 No Action Alternative**

5 Under the No Action Alternative, the continuation of amphibious training exercises would have a
6 minimal effect on surrounding commercial establishments, as personnel participating in training exercises
7 would continue to predominantly receive their food, supplies, and shelter as part of the exercise. Aside
8 from the hiring of a few civilian contractors (e.g., for waste disposal), there would continue to be no
9 notable increase in revenue to the local economy.

10 As noted in Section 3.8.2, historical percent occupancy data for the San Mateo Campground was not
11 available; therefore, for the purposes of this EA, a worst-case analysis was performed that assumed 100
12 percent occupancy of all campsites during the up to 15 continuous days of campground closure associated
13 with the No Action Alternative. Based on these assumptions, continuation of the No Action Alternative
14 would result in a maximum potential State Parks revenue loss of approximately \$100,000 per year.
15 Affected campers would continue to not be able to make reservations, or have their existing reservations
16 cancelled during the closure period. However, it is likely that there would be years when amphibious
17 training exercises would not need to use the San Mateo Campground and, as such, there would be no
18 closure.

19 When planning information supports doing so, exercise proponents would strive to notify the California
20 Department of Parks and Recreation at least six months' in advance of an exercise that would require the
21 use (and therefore temporary closure) of the San Mateo Campground. Affected campers would continue
22 to have the option of using alternative California Department of Parks and Recreation campsites in the
23 region, thus reducing the impact from the temporary closure of San Mateo Campground. This would
24 continue to have the potential to offset some of the theoretical maximum revenue loss for the State of
25 California.

26 During amphibious training exercises at Green Beach and within the State Lease Areas, portions of the
27 beach and surf zone(s) would continue to be temporarily closed to the public. The temporary closures of
28 State Lease Area beaches and associated trails would continue to last approximately half a day (i.e., four
29 to six hours), but could on occasion last as long as several consecutive days, depending on the type and
30 duration of the exercise activity in the area. These effects would continue to be minimized through
31 advance notification of closure to the California Department of Parks and Recreation, in accordance with
32 the 1971 Lease Agreement. Because the closures would be temporary and infrequent, no indirect adverse
33 impact to regional commercial enterprises that cater to beach goers would occur.

34 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
35 no significant impacts to socioeconomics with the continued implementation of the No Action
36 Alternative.

37 **3.8.3.2 Alternative 1**

38 Impacts to socioeconomics under Alternative 1 would be focused on the same areas as presented under
39 the No Action Alternative. The proposed increase in annual training tempo would result in an incremental
40 increase in some of the socioeconomic effects described for the No Action Alternative. Specifically,
41 impacts due to the temporary closure of beaches and surfing areas would increase. Exercise proponents
42 would coordinate (via the California Department of Parks and Recreation and the California Coastal
43 Commission) in advance to minimize impacts to organized surfing events that are regularly held at

1 Trestles. This would minimize the short-term impact to local businesses caused by a reduction in
2 patronage due to temporary beach closure.

3 Under Alternative 1, the San Mateo Campground could be closed for approximately 30 days each
4 calendar year. Based on the worst-case assumptions described above under the No Action Alternative
5 (i.e., 100 percent occupancy of all campsites during the closure period), closing the San Mateo
6 Campground for up to an 15 additional days (30 days per year total) to public campers each calendar year
7 would result in a maximum additional State Parks revenue loss of \$100,000. Thus, under Alternative 1,
8 the total maximum impact to State Parks revenue would be \$200,000 from the cumulative campground
9 closure of 30 days each calendar year. Affected campers would continue to have the option of using
10 alternative California Department of Parks and Recreation campsites in the region, thus reducing the
11 impact from the temporary closure of San Mateo Campground. This would continue to have the potential
12 to offset some of the theoretical maximum revenue loss for the State of California.

13 Potential campground closure windows would be communicated by the exercise proponent to the
14 California Department of Parks and Recreation as soon as information supports doing so. Then, as the
15 exercise draws closer and the training days become firm., the actual campground closure days would be
16 re-communicated This process would likely result in previously “closed” days (i.e., as identified in the
17 initially communicated campground “closure window”) becoming available to campers.

18 Minimizing campground closure during peak recreational season would be one of many planning
19 considerations taken into account when scheduling exercises. Mission requirements (training in all
20 seasons, all weather states) are a top priority. Scheduling is also based on funding and force operational
21 tempo and availability. Accordingly, campground closures during peak recreational season cannot be
22 completely avoided but would be minimized to the extent feasible and consistent with mission
23 requirements.

24 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
25 no significant impacts to socioeconomics from implementation of Alternative 1.

26 **3.8.3.3 Alternative 2**

27 Under Alternative 2, the geographic scope of amphibious training would be expanded to include White
28 Beach. However, there are no recreational facilities or public access adjacent to White Beach.
29 Accordingly, Alternative 2 would not result in any additional impact as compared to Alternative 1.

30 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
31 no significant impacts to socioeconomics from implementation of Alternative 2.

3.9 HAZARDOUS MATERIALS AND WASTE

32 **3.9.1 DEFINITION OF RESOURCE**

33 For purposes of this EA, a hazardous material is defined as any item or agent (biological, chemical,
34 physical) that has the potential to cause harm to humans, animals, or the environment, either by itself or
35 through interaction with other factors. Hazardous materials are characterized by their ignitability,
36 corrosiveness, reactivity, and toxicity. Hazardous materials and wastes are regulated by local, state,
37 federal laws and regulations, and other requirements and agreements, including management plans that
38 are specific to MCB Camp Pendleton.

3.9.2 AFFECTED ENVIRONMENT

Hazardous materials currently used at MCB Camp Pendleton during existing amphibious training activities include petroleum products, batteries, cleaning materials, and similar products. The use of equipment, vehicles, ships, boats, and planes does result in the potential for small amounts of hazardous materials to enter the environment; however, this potential is minimized through the adherence to existing regulations and standard operating procedures.

Hazardous materials and wastes used and generated during current amphibious training exercises are handled and disposed of in accordance with all applicable federal, military, state, and local laws and regulations (MCB Camp Pendleton 2008a). Wastes generated during amphibious training exercises are accommodated by the current MCB Camp Pendleton waste disposal system. MCB Camp Pendleton requires all hazardous waste to be removed from all hazardous waste accumulation sites within 60 days of the wastes being generated. This ensures that hazardous wastes do not stay onsite longer than regulations allow. All training and non-training activities aboard the Base follow MCB Camp Pendleton's Spill Prevention Control and Countermeasure Plan (MCB Camp Pendleton 2008a) and the MCB Camp Pendleton Hazardous Waste Management Plan (MCB Camp Pendleton 2011a). In accordance with MCB Camp Pendleton's Spill Prevention Control and Countermeasure Plan, personnel immediately contain and clean up any hazardous material spill using spill control equipment and supplies that are kept on-hand.

As defined in OPNAVINST 5090.1D (Chapter 35), environmental compliance policies and procedures applicable to shipboard operations reinforce Clean Water Act prohibitions against discharging harmful quantities of hazardous substances into or upon U.S. waters out to 200 nautical miles. Standard Navy protocol is to conduct operations in such a manner to eliminate or minimize any impacts to the marine environment from hazardous substances.

There are four Installation Restoration sites located in the training areas or within 1,000 ft (305 m) of the proposed training areas. Installation Restoration Sites 34, 36, and 37 are located well inland from Green Beach. Similarly, Installation Restoration Site 150 is located within 1,000 ft (305 m) of proposed terrestrial activities at the Del Mar Boat Basin. Installation Restoration sites are mapped and as such are avoiding during training activities.

The MCB Camp Pendleton Installation Restoration program is designed to comply with procedural and substantive requirements of the Comprehensive Environmental Response, Compensation, and Liability Act and the Superfund Amendments and Reauthorization Act, with regulations promulgated under these Acts and other relevant and applicable federal and State laws including the ESA. Installation Restoration personnel ensure that potential impacts from environmental contaminants remediation activities are fully considered when planning and implementing natural resource conservation measures on MCB Camp Pendleton (MCB Camp Pendleton 2012a).

Explosions and underwater demolitions do not currently occur as part of on-going amphibious training exercises. Live-fire is limited to existing designated inland training areas.

3.9.3 ENVIRONMENTAL CONSEQUENCES

3.9.3.1 No Action Alternative

Under the No Action Alternative, small leaks or spills may potentially continue to have the potential to occur on occasion due to equipment failure (e.g., a burst hydraulic line) and/or human error. Minor quantities of petroleum products, including fuel, oil, hydraulic fluids, and lubricants, would continue to have the potential to enter marine waters during amphibious training exercises. In accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013a), personnel would continue to immediately contain and clean up any hazardous material spill using spill control equipment and supplies, which are readily available on vessels and vehicles.

1 Under the No Action Alternative, all upland maintenance and refueling activities would continue to be
2 conducted in accordance with the Spill Prevention Control and Countermeasure Plan (Navy 2013a)
3 prepared in support of training exercises. Personnel would continue to not dig graywater percolation pits
4 in areas that are known to contain contaminated soils. Graywater percolation pit discharge would continue
5 to not come into contact with any materials or equipment that may cause the migration of potential
6 contaminants to surface water or groundwater. No explosions and underwater demolitions would occur,
7 and live-fire would continue to be limited to existing designated inland training areas.

8 Under the No Action Alternative, hazardous materials and wastes used and generated during current
9 amphibious training exercises would continue to be handled and disposed of in accordance with all
10 applicable federal, military, state, and local laws and regulations (e.g., MCB Camp Pendleton 2008a).
11 Terrestrial training exercises would continue to not generate hazardous materials or wastes in quantities or
12 of a type that could not be accommodated by the current MCB Camp Pendleton disposal system. In
13 addition, Installation Restoration Sites 34, 36, and 37, located near Green Beach, and Site 150, located
14 within the Del Mar Boat Basin, would continue to be avoided and therefore existing training exercises
15 would continue to not impact (and not be impacted by) by these sites, as the sites would be avoided.

16 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
17 no significant impacts to hazardous materials and wastes with the continued implementation of the No
18 Action Alternative.

19 **3.9.3.2 Alternative 1**

20 Under Alternative 1, the proposed increase in annual training tempo would result in an incremental
21 increase in the transport, storage, use, and disposal of hazardous materials and wastes. Hazardous
22 materials and wastes would continue to be managed in accordance with existing regulations, and be
23 accommodated by the existing storage and disposal processes at MCB Camp Pendleton. The increase in
24 amphibious training activity would result in an increase in potential for fuel, oil, lubricants to be released
25 into the environment. Existing procedures and instructions would be followed, thus reducing the potential
26 for a spill to occur. If a spill were to occur, the spill would be immediately cleaned up by onsite personnel
27 using readily available supplies and equipment.

28 Under Alternative 1, lighterage craft refueling activities would be conducted in accordance with the Spill
29 Prevention Control and Countermeasure Plan (Navy 2013a), the HSTT EIS (Navy 2013b), and Navy spill
30 prevention protocols. To minimize the potential for spills of JP5 (the fuel used at sea) during at-sea
31 refueling operations, personnel would follow Military Sealift Command Instruction 5090.1C,
32 *Environmental Protection Program* and planning procedures and instructions such as those outlined in 33
33 CFR 156.150.

34 Under Alternative 1, no additional Installation Restoration Sites would be located within the project area
35 and Installation Restoration Sites 34, 36, 37, and 150 would be avoided. Therefore, the exercises would
36 not impact, or be impacted by, these sites. No explosions and underwater demolitions would occur, and
37 live-fire would continue to be limited to existing designated inland training areas.

38 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
39 no significant impacts to hazardous materials and wastes from implementation of Alternative 1.

40 **3.9.3.3 Alternative 2**

41 Under Alternative 2, the increased geographic scope of amphibious training would result in similar
42 impacts to those described under Alternative 1. The potential for an accidental spill would be expanded

- 1 over a larger area than Alternative 1 (i.e., on and offshore of White Beach). No additional Installation
2 Restoration Sites are located within 1,000 ft (305 m) of the proposed expanded training areas at White
3 Beach.
- 4 Therefore, with the application of the identified mitigation measures (refer to Table 3.0-1), there would be
5 no significant impacts to hazardous materials and wastes from implementation of Alternative 2.

1 CHAPTER 4 2 CUMULATIVE IMPACT ANALYSIS

3 4.1 REGULATORY SETTING

4 Cumulative impacts are those that result from “the incremental impacts of the action when added to other
5 past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes
6 such other actions” (40 CFR § 1508.7 of the CEQ Regulations). Cumulative impacts can also result from
7 individually minor but collectively significant actions taking place over a period of time.

8 Cumulative impacts may occur when there is a relationship between a proposed action and other actions
9 expected to occur in a similar location. This relationship may or may not be obvious. Actions
10 overlapping, or in close proximity to, a proposed action can have more potential for cumulative impacts
11 on “shared resources” than actions that may be geographically separated. Similarly, actions that coincide
12 temporally would tend to offer a higher potential for cumulative impacts. A definition of cumulative
impacts, under NEPA, can be found in 40 CFR, § 1508.7 of the CEQ Regulations.

4.2 GEOGRAPHIC SCOPE OF THE CUMULATIVE EFFECTS ANALYSIS

13 The region where cumulative impacts may occur includes the coastal corridor along MCB Camp
14 Pendleton west of Interstate 5 to the ocean and existing inland training areas located immediately to the
15 east of Interstate 5 (Figure 4-1). The cumulative projects summarized in Table 4-1 focus on other military
16 actions and one non-federal action located within this region. The analysis presented in Section 4.4
17 considers additional impacts arising from the impacts of implementing Alternative 1 or Alternative 2
18 combined with the impacts of the other known past, present, and reasonably foreseeable future actions
19 within this region.

4.3 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

20 Past, present, and reasonably foreseeable actions within the identified cumulative effects region are
21 summarized in Table 4-1 and depicted on Figure 4-1.

**Table 4-1. Past, Present, and Reasonably Foreseeable Projects in the Vicinity of
Alternatives 1 and 2**

| Project Title ¹ | Project Description | Project Status |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| (1) Grow the Force Initiative | Construction of temporary and permanent facilities and infrastructure at MCB Camp Pendleton to support an increase in the number of personnel stationed at the installation. | Finding of No Significant Impact (FONSI) signed July 2010. Construction is on-going. |
| (2) Basewide Utility Infrastructure Improvements | Construction of new or upgrade of existing utility systems to provide reliable and compliant water, wastewater, natural gas, electrical, and communications systems to support military training and operations and delivery of life support and quality of life services. | A Final EIS and Record of Decision were completed in September 2010. Construction is on-going. |
| (3) Repair Access Roads | Repair and stabilize existing unpaved roads throughout MCB Camp Pendleton’s training ranges. | An EA is currently being developed. |

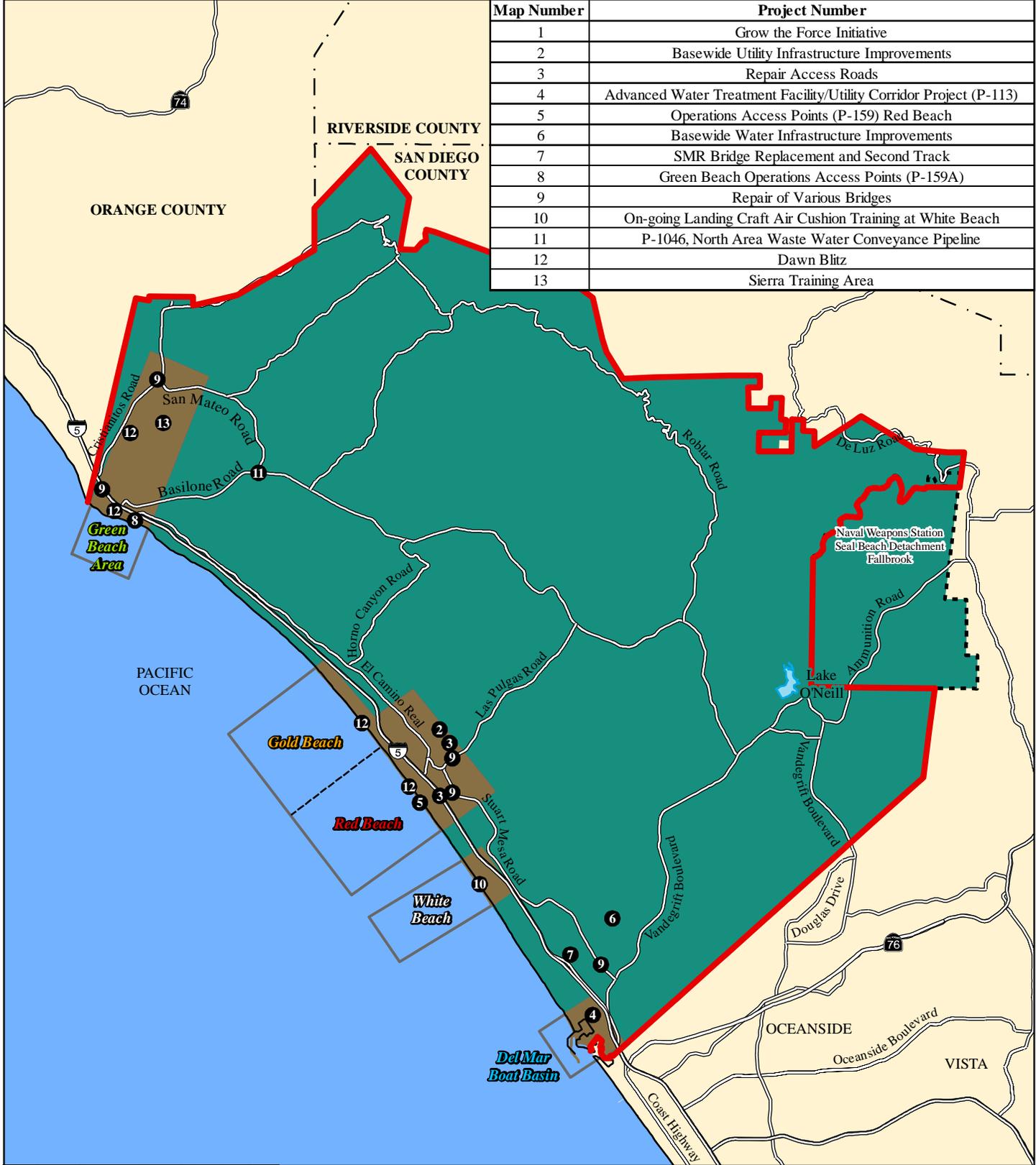
Table 4-1. Past, Present, and Reasonably Foreseeable Projects in the Vicinity of Alternatives 1 and 2

| Project Title ¹ | Project Description | Project Status |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4) Advanced Water Treatment Facility/Utility Corridor Project (P-113) | Construct, operate, and maintain an Advanced Water Treatment facility and associated infrastructure. The project included adding treatment processes to the Haybarn Canyon Drinking Water Iron/Manganese Removal Treatment Facility and constructing a pipeline for disposal of brine that will be generated by the facility. | FONSI signed in December 2010. Construction began in 2011 and is on-going. |
| (5) Operations Access Points (P-159) Red Beach | Construct and modify new and existing transit and maneuver corridors to facilitate the transit of troops and tactical vehicles between Red Beach and existing inland training areas. | Final Supplemental EA completed and FONSI signed in April 2012. Construction began in Fall 2013. |
| (6) Basewide Water Infrastructure Improvements | Construction, operation, and maintenance of infrastructure upgrades, expansions, and improvements on the installation water system and replacement of a critical link in the installation roadway system. Projects include Northern Advanced Water Treatment plant and associated facilities (P-1044), connection of the installation's northern and southern water system (P-1045). | A Final EIS and Record of Decision were completed in September 2012. The project is currently in the design phase. Construction began in 2013. |
| (7) Santa Margarita River Bridge Replacement and Second Track | The San Diego Association of Governments is replacing the existing steel truss single-track railroad bridge and the approach structure with a new reinforced concrete double-track bridge and pre-cast box trestle approach structure. | Construction began in early 2010 and is on-going. |
| (8) Green Beach Operations Access Points (P-159A) | Construct and modify existing transit and maneuver corridors to facilitate the transit of troops and tactical vehicles between Green Beach and inland training areas. The project area is located where the rail line crosses San Onofre Creek. | The Final Supplemental EA was completed in August 2011 and the FONSI was signed in October 2011. Construction began in 2013. |
| (9) Repair of Various Bridges | Perform repairs and maintenance on eight bridges to facilitate the efficient transport of personnel, equipment, and supplies. The bridges are located throughout MCB Camp Pendleton. | An EA is currently being prepared. |
| (10) On-going Landing Craft Air Cushion Training at White Beach | The Navy currently conducts Landing Craft Air Cushion training at White Beach. | Training is on-going. |
| (11) North Area Waste Water Conveyance Pipeline (P-1046) | This project involves the construction, operation, and maintenance of the North Area Waste Water Conveyance Pipeline and a pumping station to support increased wastewater flows. The project also includes demolition of the existing pumping station and associated force main pipelines, decommissioning of a Sewage Treatment Plant, and the construction of a Tributary Area Pumping Station. | NEPA coverage for P-1046 was provided via the Basewide Utilities Infrastructure EIS for which a Record of Decision was issued in September 2010. Construction of P-1046 is anticipated to begin in 2016. |
| (12) Dawn Blitz | This project consists of conducting joint and combined exercises on MCB Camp Pendleton; as this exercise has already occurred, this project is included in the baseline condition in this EA. | MCB Camp Pendleton prepared an EA in 2013 and the exercise occurred in 2013. |
| (13) Sierra Training Area | MCB Camp Pendleton has prepared a Supplemental EA to support on-going and future training within the Sierra Training Area. | MCB Camp Pendleton prepared an EA and the FONSI was signed in February 2014. |

Sources: MCB Camp Pendleton 2010a, 2010c, and 2014a; NAVFAC Southwest 2010, 2011, 2012; Navy 2012c; San Diego Association of Governments 2010; USMC 2013a.

Note: ¹ Numbers refer to project locations on Figure 4-1.

| Map Number | Project Number |
|------------|--------------------------------------------------------------------|
| 1 | Grow the Force Initiative |
| 2 | Basewide Utility Infrastructure Improvements |
| 3 | Repair Access Roads |
| 4 | Advanced Water Treatment Facility/Utility Corridor Project (P-113) |
| 5 | Operations Access Points (P-159) Red Beach |
| 6 | Basewide Water Infrastructure Improvements |
| 7 | SMR Bridge Replacement and Second Track |
| 8 | Green Beach Operations Access Points (P-159A) |
| 9 | Repair of Various Bridges |
| 10 | On-going Landing Craft Air Cushion Training at White Beach |
| 11 | P-1046, North Area Waste Water Conveyance Pipeline |
| 12 | Dawn Blitz |
| 13 | Sierra Training Area |



Legend

- MCB Camp Pendleton Boundary
- Cumulative Projects Region
- Cumulative Project Locations
- Major Road

Figure 4-1
Cumulative Effects Region and Identified Past, Present, and Reasonably Foreseeable Projects

0 1 2
Miles

0 2 4
Kilometers

1 The majority of the projects summarized in Table 4-1 are construction projects to support on-going
2 military training or to improve existing infrastructure. While not explicitly identified, as would be
3 expected within a military installation such as MCB Camp Pendleton, there is a variety of on-going
4 training within the cumulative effects region. This training has been occurring since MCB Camp
5 Pendleton's establishment. However, this training has little overlap with the proposed activities identified
6 in this EA, especially for the marine environment, except for recurring amphibious training activity (e.g.,
7 on-going Landing Craft Air Cushion training at White Beach [Project 10] and Dawn Blitz [Project 12]).

4.4 CUMULATIVE IMPACT ANALYSIS BY ENVIRONMENTAL RESOURCE AREA

8 This section addresses the additive effects of Alternative 1 or Alternative 2 as evaluated in this EA, in
9 combination with the relevant actions described above in Section 4.1. CEQ guidance states, "A
10 *cumulative effects analysis should 'count what counts,' not produce superficial analyses or a long*
11 *laundry list of issues that have little relevance to the effect of the proposed action or the eventual*
12 *decisions.*" (CEQ 1997).

13 Military training activities have been occurring at MCB Camp Pendleton since its establishment. On-
14 going military training at MCB Camp Pendleton is performed in accordance with existing regulations to
15 minimize impacts to resources. Potential impacts are minimized not only for individual, discrete actions,
16 but also at a cumulative level through on-going measures and activities. MCB Camp Pendleton takes
17 great pride in its environmental stewardship role by protecting natural resources through proactive
18 management strategies (NAVFAC Atlantic 2010a). Overarching applicable regulations and agreements,
19 for example, the Programmatic Riparian BO (USFWS 1995), MCIWEST-MCBCAMPENO 3500.1
20 ((Marine Corps Installations West-MCB Camp Pendleton 2013), and the Integrated Natural Resources
21 Management Plan (MCB Camp Pendleton 2012a) complement each other to minimize the potential
22 cumulative impacts to resource areas from on-going military training, as well as other activities (e.g., new
23 construction). As described in Chapter 3, implementation of Alternative 1 or Alternative 2 would not
24 result in significant impacts to any resource area.

25 Table 4-2 presents the cumulative impact contributions of past, present, and reasonably foreseeable
26 projects to environmental resources located within the cumulative effects region.

Table 4-2. Contribution of Past, Present and Reasonably Foreseeable Projects to Cumulative Effects

| Cumulative Project Title | Environmental Resource Area | | | | | | | | | |
|------------------------------------------------------------------------|-----------------------------|-----------------|-------------|----------------------|----------|--------------------|-------------|--------------------------------|----------------|-------------------------------|
| | Geological Resources | Water Resources | | Biological Resources | Land Use | Cultural Resources | Air Quality | Transportation and Circulation | Socioeconomics | Hazardous Materials and Waste |
| | | Marine | Terrestrial | | | | | | | |
| (1) Grow the Force Initiative | ● | ○ | ● | ● | ● | ● | ● | ● | + | ○ |
| (2) Basewide Utility Infrastructure Improvements | ● | ○ | ● | ● | ○ | ● | ● | ○ | + | ○ |
| (3) Repair 24 Access Roads | ● | ○ | ● | ● | ○ | ● | ● | ● | + | ○ |
| (4) Advanced Water Treatment Facility/Utility Corridor Project (P-113) | ● | ○ | ● | ● | ○ | ● | ● | ○ | + | ○ |
| (5) Operations Access Points (P-159) Red Beach | ● | ○ | ● | ● | ● | ● | ● | ○ | + | ○ |
| (6) Basewide Water Infrastructure Improvements | ● | ○ | ● | ● | ○ | ● | ● | ○ | + | ○ |
| (7) Santa Margarita River Bridge Replacement | ● | ○ | ● | ● | ○ | ● | ● | ● | + | ○ |
| (8) Green Beach Operations Access Points (P-159A) | ● | ○ | ● | ● | ● | ● | ● | ○ | + | ○ |
| (9) Repair of Various Bridges | ● | ○ | ● | ● | ○ | ● | ● | ● | + | ○ |
| (10) On-going Landing Craft Air Cushion Training at White Beach | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ |
| (11) North Area Waste Water Conveyance Pipeline (P-1046) | ● | ○ | ● | ● | ○ | ● | ● | ○ | + | ○ |
| (12) Dawn Blitz | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ○ |
| (13) Sierra Training Area | ● | ○ | ● | ● | ● | ● | ● | ○ | ○ | ○ |

Contribution Summary Key: ● = Minor contribution; ○ = Negligible (or no) contribution; + = Beneficial contribution.

1 **4.4.1 GEOLOGICAL RESOURCES**

2 Implementation of Alternative 1 or Alternative 2 would have the potential to cause repetitive minor and
3 temporary increases in sediment suspension, erosion, and localized sedimentation; however, BMPs would
4 be implemented to reduce impacts to soils and receiving waters. Furthermore, exercises would be
5 constrained to defined areas that have historically supported and currently support similar repetitive
6 amphibious training activity with no appreciable impacts to geological resources. Personnel would fill in
7 percolation pits at the conclusion of each exercise and measures would be taken to minimize the potential
8 for offsite migration of soils and graywater. Unique geologic features would not be impacted.
9 Temporarily excavated areas on the beach would be filled in at the conclusion of each exercise to match
10 existing contours. There would be no impact to sand movement or permanent impact to beach contours.

11 The identified cumulative projects have the potential to result in minor, temporary impacts on erosion and
12 sedimentation; however, these potential impacts would be moderated through the implementation of
13 project-specific BMPs and erosion control measures as specified by Construction General Permits (as
14 applicable). Therefore, when added to the impacts from other identified cumulative projects, Alternative 1
15 or Alternative 2 would not result in significant cumulative impacts to geological resources.

16 **4.4.2 WATER RESOURCES**

17 **4.4.2.1 Marine Water Quality**

18 Proposed amphibious training exercises would temporarily suspend sediments/sand in the surf zone,
19 resulting in focused, short-term areas of increased turbidity. The proposed beaches are areas of high-
20 energy surf with a predominantly naturally high level of turbidity; therefore, the additive effects of short-
21 term increases in turbidity would be minor and temporary. Beach sand deposited in the nearshore zone
22 from creation of the temporary excavated areas and similar activities would have the potential to be
23 gradually reworked by the forces of wave action, longshore currents, and seasonal storms into offshore
24 sandbars and the natural beach profile, depending on the location of the sand piles. Beach activities and
25 operations within the Del Mar Boat Basin could increase turbidity in the water column and interfere with
26 filter-feeding benthic organisms sensitive to turbidity. However, the level of increase in turbidity would
27 be short term, limited only to the time of activity. Refueling activities would be conducted in accordance
28 with the Spill Prevention Control and Countermeasure Plan (Navy 2013a), the HSTT EIS (Navy 2013b),
29 and Navy spill prevention protocols.

30 Other than on-going Landing Craft Air Cushion training at White Beach, the identified cumulative
31 projects would not result in a potential for direct impacts to marine water quality as none of the projects
32 are located within the ocean. On-going Landing Craft Air Cushion training complies with existing
33 regulations that minimize the potential for direct impacts to water resources. In addition, potential indirect
34 impacts to marine water quality (e.g., by way of stormwater runoff, sedimentation, and pollution) from
35 the identified cumulative projects would be minimized through the implementation of project-specific
36 BMPs and permit requirements. Therefore, when added to the impacts from other identified cumulative
37 projects, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to marine water
38 quality.

39 **4.4.2.2 Terrestrial Water Resources**

40 Alternative 1 or Alternative 2 would occur in established areas and follow established protocols for
41 minimizing the potential for impacts to water resources. Wetlands and surface water features would be
42 avoided and temporary runoff control measures would minimize the potential for any exercise-related
43 stormwater to flow into water features. Refueling activities would be conducted in compliance with

1 USMC, federal, and state regulations that include measures to minimize the potential for impacts to water
2 quality, as highlighted in the Spill Prevention Control and Countermeasure Plan prepared for this EA
3 (Navy 2013a). Neither Alternative 1 nor Alternative 2 would directly affect ground water quality or
4 quantity.

5 Eleven of the 13 identified cumulative projects are construction-related; these projects would implement
6 project-specific BMPs and Construction General Permit conditions (as applicable) to minimize the impact
7 to water resources, both during the construction and operational phases. Cumulative projects (10) and (13)
8 also incorporate the implementation of mitigation measures to minimize impacts to water resources.
9 Cumulative project (12) has been included as part of the baseline condition. Two of the identified
10 cumulative projects (4) and (6) would result in improvements to the water production, processing, and
11 distribution system at MCB Camp Pendleton. Therefore, when added to the impacts from other identified
12 cumulative projects, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to
13 terrestrial water resources.

14 **4.4.3 BIOLOGICAL RESOURCES**

15 **4.4.3.1 Marine Biological Resources**

16 Impacts to marine biological resources from proposed amphibious training exercises could result in an
17 incremental contribution to cumulative impacts on marine biological resources. However, mitigation
18 measures would be implemented to minimize potential adverse effects to marine biological resources.
19 Potential indirect impacts to marine biological resources (e.g., by way of stormwater runoff,
20 sedimentation, and pollution) from the identified cumulative projects would be minimized through the
21 implementation of project-specific BMPs and permit requirements. Therefore, when added to the impacts
22 from other identified cumulative projects, Alternative 1 or Alternative 2 would not result in significant
23 cumulative impacts to marine biological resources or their habitat.

24 **4.4.3.2 Terrestrial Biological Resources**

25 Implementation of Alternative 1 or Alternative 2 would result in localized, temporary disturbances in the
26 project area. Alternative 1 or Alternative 2 would use areas already dedicated to training exercises, and as
27 such, would not contribute to the cumulative loss of habitat. The affected area already experiences
28 considerable use in support of on-going training exercises. The implementation of the identified
29 mitigation measures would minimize the potential impacts to terrestrial special-status species.

30 The construction projects described in Section 4.3 have undergone or would undergo separate
31 environmental reviews under NEPA and ESA, which would ensure that biological resource impacts are
32 avoided, minimized, and/or compensated to the extent practicable. The full consideration of alternatives
33 with lesser impacts and the implementation of mitigation measures of this EA have been and would
34 continue to be components of projects affecting special-status species within the cumulative effects
35 region. Regional conservation plans, in particular the MCB Camp Pendleton Integrated Natural Resources
36 Management Plan (MCB Camp Pendleton 2012a), would continue to be followed to minimize potential
37 cumulative impacts to the special-status species. While individual species may be affected by any
38 particular project, the overall distribution or abundance of populations and habitats and ecosystem
39 functions and values would not be significantly affected. Therefore, when added to the impacts from other
40 identified cumulative projects, Alternative 1 or Alternative 2 would not result in significant cumulative
41 impacts to terrestrial special status species or their habitat.

1 4.4.4 CULTURAL RESOURCES

2 Implementation of Alternative 1 or Alternative 2 would not impact cultural resources. All cumulative
3 projects with potential for impacting cultural resources would have undergone Section 106 review and
4 any impacts would be mitigated as required. Therefore, when added to the impacts from other identified
5 cumulative projects, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to
6 cultural resources.

7 4.4.5 LAND USE

8 Implementation of Alternative 1 or Alternative 2 would result in the continued temporary closure of
9 coastal elements of San Onofre State Beach (i.e., Trestles Beach, Surf Beach and San Onofre Bluffs), San
10 Onofre State Beach, and the Marine Corps Community Services San Onofre Beach facility, resulting in
11 the temporary displacement of aquatic recreation in these areas. In addition, recreational boats would
12 continue to be subject to course alterations to avoid interfering with exercises. The San Mateo
13 Campground would be subject to closure for approximately 30 cumulative days each calendar year. The
14 bike path passing through MCB Camp Pendleton would be subject to closure during training exercises.
15 Impacts to recreation would be temporary and would be lessened with the application of the identified
16 mitigation measures.

17 Eleven of the 13 identified cumulative projects are construction or infrastructure improvement related,
18 and would occur in areas not typically frequented by the public for recreation purposes. None of the
19 identified cumulative projects would result in the temporary closure of the San Mateo Campground or
20 other State Lease Areas. However, some of the cumulative projects (e.g., the Bridge Repair activities
21 inland of Green Beach and P-159) may temporarily impact recreation pathways in the area. Any impacts
22 would likely consist of cordoning off work areas (i.e., safety related) and are not expected to result in the
23 total elimination of recreation access. Future amphibious training exercise schedulers would be cognizant
24 of the construction schedules for the identified cumulative projects and would strive to avoid scheduling
25 exercises around localized construction activity if recreation impacts would overlap. Therefore, when
26 added to the impacts from other identified cumulative projects, Alternative 1 or Alternative 2 would not
27 result in significant cumulative impacts to land use.

28 4.4.6 AIR QUALITY

29 Cumulative impacts resulting from implementation of Alternative 1 or Alternative 2, in conjunction with
30 impacts from other present and reasonably foreseeable future projects could potentially occur during
31 proposed training exercises. Emissions from past projects have had an impact on ambient air quality in
32 the San Diego Air Basin.

33 Air quality impacts from proposed amphibious training exercises would occur from combustive emissions
34 due to the use of fossil fuel-powered technical equipment (e.g., marine and ground vessels and aircraft)
35 and fugitive dust (PM₁₀ and PM_{2.5}) emissions from the use of vehicles on bare soils. Proposed amphibious
36 training exercises would produce emissions that would remain below applicable conformity significance
37 thresholds. Any concurrent emissions-generating action that occurs in the vicinity of proposed
38 amphibious training exercises would potentially contribute to the ambient impact of these emissions.
39 However, since proposed amphibious training would produce minor amounts of emissions as compared to
40 the baseline conditions (No Action Alternative), the combination of proposed training and future project
41 air quality impacts would not contribute to an exceedance of an ambient air quality standard.

42 The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as
43 individual sources of GHG emissions are not large enough to have an appreciable effect on climate

1 change. Therefore, an appreciable impact on global climate change would only occur when proposed
 2 GHG emissions combine with GHG emissions from other man-made activities on a global scale.

3 Currently, there are no formally adopted or published NEPA thresholds of significance for GHG
 4 emissions. Therefore, in the absence of a formally adopted threshold of significance for GHGs, this EA
 5 compares GHG emissions that would occur from implementation of Alternative 1 or Alternative 2 to the
 6 U.S. net GHG baseline inventory of 2011 (USEPA 2013b) to determine the relative increase in proposed
 7 GHG emissions. Table 4-3 summarizes the annual GHG emissions associated with the No Action
 8 Alternative, which are equivalent to existing conditions.

Table 4-3. Estimated GHG Emissions from the No Action Alternative

| Scenario/Activity | Metric Tons per Year ⁽¹⁾ | | | |
|------------------------------------------------------------|-------------------------------------|-----------------|------------------|-------------------|
| | CO ₂ | CH ₄ | N ₂ O | CO ₂ e |
| No Action Emissions | 38,629.90 | 3.32 | 4.31 | 40,034.39 |
| Draft NEPA Threshold | | | | 25,000 |
| U.S. 2011 Baseline Emissions (10 ⁶ metric tons) | - | - | - | 6,702.3 |
| Proposed Emissions as a % of U.S. Emissions | - | - | - | 0.00059% |

Note: ¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310).

Sources: CEQ 2010, USEPA 2013b.

9 Table 4-4 summarizes the annual GHG emissions associated with Alternative 1 or Alternative 2
 10 (emissions would be the same for either alternative). Appendix B presents an estimate of GHG emissions
 11 generated by Alternative 1 or Alternative 2. These data show that the additional CO₂e emissions
 12 associated with either alternative (after subtracting the baseline emissions) would amount to
 13 approximately 0.000105 percent of the total CO₂e emissions generated from all sources in the U.S. in
 14 2011 (the most recent data available) (USEPA 2013b). Emissions under either Alternative 1 or
 15 Alternative 2 would be below the 25,000 metric tons of CO₂e level proposed in the draft NEPA guidance
 16 by the CEQ (CEQ 2010). Therefore, when added to the impacts from other identified cumulative projects,
 17 Alternative 1 or Alternative 2 would not result in significant cumulative impacts to air quality.

Table 4-4. Estimated GHG Emissions from Implementation of Alternatives 1 or 2

| Scenario/Activity | Metric Tons per Year ⁽¹⁾ | | | |
|------------------------------------------------------------|-------------------------------------|-----------------|------------------|-------------------|
| | CO ₂ | CH ₄ | N ₂ O | CO ₂ e |
| Baseline (No Action Alternative) Emissions | 38,629.90 | 3.32 | 4.31 | 40,034.39 |
| Alternative 1 or 2 Emissions | 45,248.60 | 4.06 | 5.60 | 47,068.63 |
| Net Increase in GHG Emissions | 6,618.70 | 0.74 | 1.29 | 7,034.24 |
| Draft NEPA Threshold | | | | 25,000 |
| U.S. 2011 Baseline Emissions (10 ⁶ metric tons) | - | - | - | 6,702.3 |
| Proposed Emissions as a % of U.S. Emissions | - | - | - | 0.000105% |

Note: ¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310).

Sources: CEQ 2010, USEPA 2013b.

18 Although implementation of Alternative 1 or Alternative 2 would result in a very small contribution to
 19 cumulative impacts associated with global climate change, this important topic warrants discussion of
 20 Marine Corps and Navy leadership in broad-based programs to reduce energy consumption and shift to
 21 renewable and alternative fuels, thereby reducing emissions of carbon dioxide and other greenhouse
 22 gases.

23 EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was adopted in
 24 October 2009, and provides early strategic guidance to federal agencies in the management of GHG
 25 emissions. The early strategy directs the agencies to increase renewable energy use to achieve general
 26 GHG emission reductions. According to the provisions of EO 13514, federal agencies will be required to
 27 develop a 2008 baseline for scope 1 and 2 GHG emissions, and to develop a percentage reduction target

1 for agency-wide reductions of scope 1 and 2 GHG emissions by fiscal year 2020. As part of this effort,
2 federal agencies will evaluate sources of GHG emissions, and develop, implement, and annually update
3 an integrated Strategic Sustainability Performance Plan that will prioritize agency actions based on
4 lifecycle return on investment. The intent is to evaluate GHG emissions on a lifecycle basis and to
5 identify feasibility of sustainability strategies on that basis. The DoD is currently developing its Strategic
6 Sustainability Performance Plan that will guide Marine Corps initiatives to reduce GHG emissions.

7 The USMC Expeditionary Energy Strategy and Implementation Plan expanded on the previous USMC
8 Facilities Energy and Water Management Program Campaign Plan to create a “bases to battlefield” plan
9 intended to “decrease the Marine Corps’ dependence on fossil fuels in a deployed environment” (USMC
10 2011). The Expeditionary Energy Strategy and Implementation Plan identifies long-term goals to reduce
11 energy intensity and increase the percentage of renewable electrical energy consumed. The plan’s
12 missions are to “ensure a secure, reliable, and affordable energy and water supply reduce lifecycle
13 operating costs of Marine Corps installations...and support our nation’s efforts to reduce greenhouse gas
14 emissions and environmental impacts, reduce dependence on foreign oil, and promote conservation of
15 water supplies.” At MCB Camp Pendleton, the implementation of the Expeditionary Energy Strategy and
16 Implementation Plan on a project-by-project basis (as applicable) contributes to a reduction in greenhouse
17 gas emissions, and thus a positive benefit to air quality.

18 **4.4.7 TRANSPORTATION AND CIRCULATION**

19 Implementation of Alternative 1 and Alternative 2 would result in temporary and localized traffic impacts
20 from the very short-term closure of a short segment of Old Highway 101 and Cristianitos Road, which
21 would occur when vehicles move inland from Green Beach and State Lease Area beaches. A temporary
22 impact may also result from the periodic transfer of personnel and materiel between the Silver Strand
23 Training Complex and MCB Camp Pendleton. Finally, a temporary indirect impact may occur if passing
24 motorists on Interstate 5 pause to observe exercise elements crossing over the freeway. Impacts to
25 transportation and circulation would be temporary, localized, and minimized through the application of
26 mitigation measures.

27 Cumulative projects (2) through (9) and (11) would involve infrastructure improvements that would not
28 create a recurring increase in traffic during operations. Instead, the traffic impacts of these projects would
29 occur during construction, and would therefore be limited in scope and duration. Two projects (10 and 13)
30 are on-going training activities within MCB Camp Pendleton whose operational traffic, if any, would not
31 affect traffic on Interstate 5 or other public roadways. One cumulative project (12) has been included in
32 the baseline conditions for each resource area. One cumulative project (1), the Grow the Force Initiative,
33 would involve additional operational traffic due to the proposed increase in personnel stationed at MCB
34 Camp Pendleton. Accordingly, traffic on internal MCB Camp Pendleton roadways, public streets
35 approaching MCB Camp Pendleton, and at access gates would be expected to increase. Although
36 Alternative 1 and Alternative 2 would contribute toward a cumulative traffic effect, given the relatively
37 minor impact of the action alternatives, and accounting for impact minimization due to mitigation
38 measures, this contribution would be less than significant. Therefore, when added to the impacts from
39 other identified cumulative projects, Alternative 1 or Alternative 2 would not result in significant
40 cumulative impacts to transportation and circulation.

41 **4.4.8 SOCIOECONOMICS**

42 Implementation of Alternative 1 and Alternative 2 would result in less than significant, short-term
43 impacts to socioeconomics due to the temporary displacement of recreational users of San Onofre State
44 Beach, including San Mateo Campground and beach and in-water recreational areas. There would also be
45 beneficial impacts, due to the temporary hiring of civilian contractors, which would contribute to the local
46 economy. Similarly, as cumulative projects (1) through (9) and (11) involve infrastructure improvements,

1 short-term beneficial impacts to the surrounding businesses would likely occur, as workers would
2 patronize various commercial establishments for food, supplies, etc. during project construction. Project
3 (10) involves on-going training activities that do not involve any direct interaction with the local or
4 regional economy. However, an indirect and beneficial impact may arise from training participants
5 making purchases at various local commercial establishments. None of the cumulative projects is
6 expected to temporarily or permanently displace recreational users or other consumers who contribute to
7 the local and regional economy. Therefore, when added to the impacts from other identified cumulative
8 projects, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to
9 socioeconomics.

10 **4.4.9 HAZARDOUS MATERIALS AND WASTE**

11 Implementation of Alternative 1 and Alternative 2 would result in less than significant impacts to
12 hazardous materials and waste. These impacts would result from the increased training tempo and at-sea
13 refueling, which would involve the use, storage, and generation of small quantities of hazardous
14 materials. The proposed training exercises would comply with applicable federal, military, state, and local
15 laws and regulations. As with the Proposed Action, all cumulative projects with the potential to impact
16 hazardous materials would comply with federal, military, state, and local laws and regulations regarding
17 hazardous material use and disposal. Therefore, when added to the impacts from other identified
18 cumulative projects, Alternative 1 or Alternative 2 would not result in significant cumulative impacts to
19 hazardous materials and waste.

20 **4.5 CUMULATIVE IMPACTS CONCLUSION**

21 Cumulative impacts to the environmental resource areas evaluated herein from the No Action, Alternative
22 1, or Alternative 2, in conjunction with other past, present, and reasonably foreseeable projects, would not
23 be significant.

1 **CHAPTER 5**
 2 **OTHER NEPA CONSIDERATIONS**

3 **5.1 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL,**
 4 **REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS**

3 Implementation of Alternative 1 or Alternative 2 would be consistent with all applicable federal, regional,
 4 state and local plans, policies, and controls to the extent required by federal law and regulation. No
 5 potential conflicts have been identified. Table 5-1 provides a summary of environmental compliance with
 6 implementation of Alternative 1 or Alternative 2.

Table 5-1. Status of Compliance of Alternatives 1 and 2 with Relevant Land Use Plans, Policies, and Controls

| Plans, Policies, and Controls | Regulatory/Oversight Authority | Status of Compliance |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • NEPA (42 USC §§ 4321-4370h) • CEQ Regulations (Title 40 CFR 1500-1508) • Navy Procedures for Implementing NEPA (32 CFR 775) • OPNAVINST 5090.1D (January 10, 2014) • Marine Corps Order P5090.2A, Change 3, Chapter 12 (23 Aug 2013) | CEQ, Navy, USMC | This EA has been prepared in accordance with the CEQ Regulations implementing NEPA and Navy and USMC NEPA procedures. |
| CAA, as amended (42 USC §§ 7401-7671q) | USEPA | Per CAA regulations, Alternative 1 or Alternative 2 would not compromise air quality attainment status or conflict with attainment status and maintenance goals established in the San Diego Air Pollution Control District State Implementation Plan. A formal CAA conformity determination is not required. Alternative 1 or Alternative 2 would be in compliance with the CAA and would comply with all applicable San Diego Air Pollution Control District Rules and Regulations. |
| Clean Water Act (33 USC §§ 1251-1387) | USEPA, USACE | Alternative 1 or Alternative 2 would involve in-water construction activities for which a Clean Water Act Section 404 multi-year permit from the USACE would be obtained, along with the related Section 401 Water Quality Certification from the San Diego RWQCB after the decision document is signed. |
| Coastal Zone Management Act (16 CFR §§ 1451-1466) | California Coastal Commission | The Coastal Zone Management Act of 1972 (16 USC Section 1451) encourages coastal states to be proactive in managing coastal zone uses and resources. Excluded from any coastal zone are lands the use of which by law is subject solely to the discretion of the federal government or which is held in trust by the federal government (16 USC 1453). Accordingly, although MCB Camp Pendleton is federal government property and therefore, excluded from the coastal zone, CPF nonetheless is conducting an effects analysis as part of its determination of the action's effects for purposes of federal consistency review under the Coastal Zone Management Act. Due to past similar activities and the infrequency of training with minimal effects to coastal resources, CPF is consulting with the California Coastal Commission. |
| ESA (16 USC §§ 1531-1599) | USFWS/NMFS | The Proposed Action would implement applicable measures identified in the HSTT BO (NMFS 2013c) for federally listed marine species. Upland activities that would occur as part of the Proposed Action and that would potentially affect federally listed species are covered under BOs from previous USFWS consultation (e.g., USFWS 1995, 2011a; and Marine Corps Installations West 2013). All applicable programmatic avoidance measures identified in previous BOs would be implemented. Therefore, |

Table 5-1. Status of Compliance of Alternatives 1 and 2 with Relevant Land Use Plans, Policies, and Controls

| Plans, Policies, and Controls | Regulatory/Oversight Authority | Status of Compliance |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Alternative 1 or Alternative 2 would be in compliance with the ESA. |
| EO 11990, <i>Protection of Wetlands</i> | CEQ | Alternative 1 or Alternative 2 would avoid impacts to wetlands and would be in compliance with EO 11990. |
| EO 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i> | CEQ | There would be no disproportionately high and adverse human health or environmental effects on minority populations or low-income populations. Alternative 1 or Alternative 2 would be in compliance with EO 12898. |
| EO 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i> | Task Force on Environmental Health Risks and Safety Risks to Children | Under Alternative 1 or Alternative 2, proposed amphibious training exercises would occur on MCB Camp Pendleton in areas that are always, or that would temporarily be made (e.g., San Mateo Campground), off-limits to the general public; thus, children would not be present during amphibious training activities. Therefore, Alternative 1 or Alternative 2 would not disproportionately expose children to environmental health risks or safety risks and would be in compliance with EO 13045. |
| EO 13112, <i>Invasive Species</i> | Invasive Species Council | Alternative 1 or Alternative 2 would be in compliance with Chapter 35 of OPNAVINST 5090.1D (Chapters 12 and 35), which contain guidelines for the control of ship ballast water to prevent the introduction of unwanted aquatic organisms and pathogens. |
| EO 13186, <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i> | USFWS | Alternative 1 or Alternative 2 are not likely to adversely affect migratory bird populations and would be in compliance with EO 13186. |
| Magnuson-Stevens Fishery Conservation and Management Act as amended by the Sustainable Fisheries Act of 1996 (16 USC §§ 1801-1891d) | NMFS | Alternative 1 or Alternative 2 would have relatively minor, temporary adverse effects on EFH for federally managed fish species within the Coastal Pelagic Species and West Coast Groundfish Fishery Management Plans. These effects would be temporary and limited in scope. CPF is consulting with NMFS regarding EFH. |
| Marine Mammal Protection Act (16 USC §§ 1431-1445c-1) | NMFS | The Proposed Action would implement applicable measures identified in the HSTT Letter of Authorization (NMFS 2013a, b). Therefore, Alternative 1 or Alternative 2 would be in compliance with the Marine Mammal Protection Act. |
| Migratory Bird Treaty Act (16 USC §§ 703-712) | USFWS | Alternative 1 or Alternative 2 are not likely to adversely affect migratory bird populations and would be in compliance with the Migratory Bird Treaty Act. |
| National Historic Preservation Act (16 USC §§ 470-470x-6) | Advisory Council in Historic Preservation, California State Historic Preservation Officer | Amphibious training exercises associated with Alternative 1 or Alternative 2 would be planned and conducted to avoid impacts to National Register of Historic Places or National Register of Historic Places-eligible properties. Therefore, Alternative 1 or Alternative 2 would be in compliance with the National Historic Preservation Act. CPF (via MCB Camp Pendleton Environmental Security) is consulting with the State Historic Preservation Office. |
| Section 10 of the Rivers and Harbors Act (33 USC §§ 403) | USACE | Alternative 1 or Alternative 2 would involve in-water construction activities for which a Rivers and Harbors Act Section 10 Letter of Permission will be obtained after the decision document is signed. |
| Sikes Improvement Act (16 USC §§ 670-670f) | USFWS | Alternative 1 or Alternative 2 would be in compliance with the Sikes Act Improvement Act via the MCB Camp Pendleton Integrated Natural Resources Management Plan. |

5.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES CONSIDERED

1 Under Alternative 1 or Alternative 2, the consumption of energy for executing proposed amphibious
2 training exercises would be minimal and short term. No new construction or maintenance of existing
3 facilities would occur. Where applicable and feasible, energy conserving measures would be integrated
4 into amphibious training exercises. Any energy needed to implement Alternative 1 or Alternative 2 would
5 be temporary, and would not increase or decrease the potential for energy conservation elsewhere.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

6 Resources that are irreversibly or irretrievably committed to a project are those that are used on a long
7 term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and
8 other natural or cultural resources. These resources are irretrievable in that they would be used for this
9 project when they could have been used for other purposes. Human labor is also considered an
10 irretrievable resource. Another impact that falls under this category is the unavoidable destruction of
11 natural resources that could limit the range of potential uses of that particular environment.

12 Implementation of Alternative 1 or Alternative 2 would result in an irreversible loss of fossil fuel that
13 would be used during military equipment and vehicle use, propulsion of and onboard power generation
14 for at-sea vessels, and onshore power generation from temporary generators. Implementation of
15 Alternative 1 or Alternative 2 would also result in an irretrievable commitment of human labor. These
16 irreversible and irretrievable commitment of resources would not be considered significant as these
17 resources are plentiful.

18 Implementation of Alternative 1 or Alternative 2 would not result in the destruction of environmental
19 resources such that the range of potential uses of the environment would be limited, or affect the
20 biodiversity of the region.

5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY

21 NEPA requires an analysis of the relationship between a project's short term impacts on the environment
22 and the effects that these impacts may have on the maintenance and enhancement of the long-term
23 productivity of the affected environment. Impacts that narrow the range of beneficial uses of the
24 environment are of particular concern. This refers to the possibility that choosing a single development
25 option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other
26 resource to a certain use often eliminates the possibility of other uses being performed at that site.

27 Alternative 1 or Alternative 2 would, reversibly, dedicate parcels of land, equipment, and other resources
28 to a particular use during a limited period of time. These resources would not be available for other
29 productive uses throughout the duration of the project. However, these impacts are considered negligible,
30 as the facilities and geographic areas associated with Alternative 1 or Alternative 2 are designated for and
31 have historically accommodated the types of uses proposed in support of amphibious training exercises.
32 Furthermore, impacts would be short term. Implementation of Alternative 1 or 2 would not result in any
33 long-term effects on the biodiversity or environmental integrity of MCB Camp Pendleton, nor on the
34 surrounding regional environment.

35 Amphibious training exercises could include the temporary closure of the San Mateo Campground for
36 approximately 30 days each calendar year, and the continued temporary closure of the surf zone and

1 beaches at Green Beach and the State Lease Area beaches during amphibious exercises. When planning
2 information supports doing so, exercise proponents would strive to notify the California Department of
3 Parks and Recreation at least six months' in advance of an exercise that would require the use (and
4 therefore temporary closure) of the San Mateo Campground. At a minimum, before each exercise
5 occurring within the State Lease Areas, the California Department of Parks and Recreation would receive
6 notice (in accordance with the 1971 Lease Agreement [USA 1971]). Therefore, Alternative 1 or
7 Alternative 2 would not result in any impacts that would reduce environmental productivity or
8 permanently narrow the range of beneficial uses of the environment.

5.5 ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION

9 With the implementation of mitigation measures (refer to Table 3.0-1) into exercise planning, pre-
10 execution, execution, and post-exercise activities, implementation of Alternative 1 or Alternative 2 would
11 not result in significant environmental impacts. Therefore, there are no probable adverse environmental
12 effects that cannot be avoided or are not amenable to mitigation.

1 **CHAPTER 6**
2 **LIST OF AGENCIES AND PERSONS CONTACTED**

- 3 California Coastal Commission
- 4 California State Historic Preservation Office
- 5 National Marine Fisheries Service

1 **CHAPTER 7**

2 **LIST OF PREPARERS**

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Appendix A

Agency Correspondence

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

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March 26, 2014

Reply in Reference To: USMC_2014_0218_001

Ms. Danielle Page
Head, Cultural Resource Management Branch
Assistant Chief of Staff, Environmental Security
United States Marine Corps
Box 555010
Camp Pendleton, CA 92055-5010

Re Initiating Consultation for Joint Logistics Over the Shore (JLOTS), Marine Prepositioning Force (MPF), and Field Exercise Training (FEX), (your 5090, ENV/CRS, February 13, 2014)

Dear Ms. Page:

Thank you for initiating consultation regarding the United States Marine Corps (USMC) efforts to comply with Section 106 of the *National Historic Preservation Act of 1966* (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800. Segments of this proposed undertaking are subject to the *Programmatic Agreement among the United States Marine Corps, the Arizona and California State Historic Preservation Officers, and the Advisory Council on Historic Preservation regarding the process for compliance with Section 106 of the National Historic Preservation Act for the West Coast basing and operation of the MV-22 Osprey*.

The proposed undertaking is to provide amphibious training exercises for the Joint Logistics Over the Shore (JLOTS), Marine Prepositioning Force (MPF), and Field Exercise Training (FEX) for Navy, Marine Corps, and Army personnel, operating on the West Coast, to gain and improve amphibious combat competencies at a location that allows focused assemblage and execution of logistics movement from the offload to locations inland. These exercises also provide Navy and Marine Corps personnel an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to areas inland to support the range of military operations associated with amphibious warfare.

This undertaking is a continuation of amphibious training that has been, and is presently conducted at MCB Camp Pendleton. The undertakings will be located in the Red, Gold, Green, and White Beach areas, Artillery Firing Areas 16 and 18, the Sierra Training Area (STA), and the Del Mar Boat Basin. After troops, equipment, vehicles, and supplies have been offloaded, they will be transported over existing access roads by vehicles or by MV-22 Ospreys to the inland training areas located in the central and western portions of MCB Camp Pendleton. It is anticipated that the average annual amphibious training exercises tempo will increase by approximately 25% (as compared to the number of existing exercises), resulting in an approximate annual total of 15 amphibious training exercises each year at MCB Camp Pendleton. The area of potential effects (APE) for this proposed undertaking will consist of the beaches, training areas, and the boat basin identified above.

As stated in previous consultations, MCB Camp Pendleton proposed converting the former San Mateo agricultural fields into the STA, which would be used to support amphibious combat exercises. Those consultations were initiated and continued with your letters dated September 17, 2010 and October 26, 2013, to which I responded with letters dated October 29, 2010 and January 23, 2014 (both USMC070627A), respectively. In both consultations, I concurred with your findings of No Adverse Effect with Conditions. My concurrence on those two findings was predicated on the enforcement by

MCB Camp Pendleton of the restrictions on ground disturbing activities in the STA, as stated on page 12 of your letter of September 17, 2010, and on pages 17 through 19 of your letter of November 21, 2013.

After reviewing its records and the results of 13 cultural resources surveys and/or testing of parts of the APE that occurred between 1991 and 2010, MCB Camp Pendleton has identified 48 cultural resource sites as being located within the JLOTS-MPF-FEX APE. MCB Camp Pendleton has determined that the eligibility for listing on the National Register of Historic Places (NRHP) status for the 48 cultural resources sites is as follows:

- 1) Five (5) sites are currently listed on NRHP:
CA-SDI-812/H and the San Mateo Archaeological District (which consists of CA-OR-22, CA-SDI-4282, CA-SDI-4535, and CA-SDI-8435);
- 2) Eleven (11) sites have been determined previously to be eligible and those determinations have been reviewed and concurred with by CA SHPO:
CA-SDI-811, CA-SDI-1074, CA-SDI-1075, CA-SDI-1313/14791, CA-SDI-4411, CA-SDI-4538, CA-SDI-10731, CA-SDI-13324, CA-SDI-13325, CA-SDI-14006/H, and CA-SDI-16283;
- 3) Eighteen (18) sites have been determined to be eligible and you are requesting me to review and concur with those determinations at this time:
CA-SDI-4412, CA-SDI-10723, CA-SDI-10724, CA-SDI-10726, CA-SDI-13322, CA-SDI-14491, CA-SDI-14504, CA-SDI-14507/H, CA-SDI-14509, CA-SDI-14510, CA-SDI-14511, CA-SDI-14513, CA-SDI-15254, CA-SDI-15840, CA-SDI-15913, CA-SDI-20782, CA-SDI-20979, and CA-SDI-21060;
- 4) Seven (7) sites have been determined previously to be ineligible and those determinations have been reviewed and concurred with by CA SHPO:
CA-SDI-12576/H, CA-SDI-13323/H, CA-SDI-14255, CA-SDI-15122, CA-SDI-15123, CA-SDI-17544/H, and CA-SDI-19381; and
- 5) Seven (7) sites have been determined to be ineligible and you are requesting my review and concurrence with those determinations at this time:
CA-SDI-14433/14482/14514/H, CA-SDI-14495, CA-SDI-14505, CA-SDI-14506, CA-SDI-14508, CA-SDI-14514, and CA-SDI-14516.

You also stated that you had received a letter from the Pechanga Band of Luiseno Indians, who were concerned about potential impacts to the village of *Panque/Panxi*, which they believe was located in the area that contains the STA. While they believe that the previous agricultural use of that area could have disturbed cultural resources located there, they believe intact cultural resources could lie beneath the disturbed area. They are concerned that the proposed undertaking could impede their use of the village area for ongoing traditional cultural ceremonies and possibly result in the desecration of human remains. Therefore, they do not concur with the proposed undertaking and requested that the undertaking be modified to reduce impacts and potentially move the undertaking to another location.

MCB Camp Pendleton is requesting: (a) my review and comment on the identification of the APE; (b) review and concurrence with the determination that the 18 sites, identified above, are eligible for listing on the NRHP; and (c) review and concurrence with the determination that the seven sites, identified above, are ineligible for listing on the NRHP. In your letter, you also state that you will continue to consult with me, tribes, and other consulting parties for this undertaking for your findings of effects in accordance with 36 CFR Part 800.

After reviewing your letter, I have the following comments:

- 1) I have no objections to your identification and delineation of the APE, pursuant to 36 CFR Parts 800.4(a)(1) and 800.16(d);

- 2) As to your determination that the 18 sites, listed above, are eligible for listing on the NRHP, I do not believe that your letter contained sufficient information to support a conclusive determination of eligibility. However, I do recommend that MCB Camp Pendleton treat those sites as eligible for the purposes of this proposed undertaking;
- 3) I look forward to receiving your determination of effects on the eligible sites (both those previously reviewed and concurred with by me, and those that you are assuming eligibility for this undertaking only). I will review and comment on your determination of effects at that time.
- 4) As to your determination that seven sites, listed above, are ineligible for listing on the NRHP, I concur with that determination;
- 5) I encourage MCB Camp Pendleton to continue to consult with the Pechanga Band of Luiseno Indians and the other tribes to achieve a mutually agreeable resolution to their concerns about this proposed undertaking and its potential impacts to cultural resources; and
- 6) Please be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact the following members of my staff: Ed Carroll (916) 445-7006 or at email at Ed.Carroll@parks.ca.gov or Duane Marti at (916) 445-7030 or at email at Duane.Marti@parks.ca.gov.

Sincerely,



Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

Appendix B

Record of Non-Applicability and Air Quality Calculations

**RECORD OF NON-APPLICABILITY (RONA)
FOR CLEAN AIR ACT CONFORMITY
SAN DIEGO AIR BASIN**

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

The United States Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule*, in the 30 November 1993, Federal Register (40 CFR Parts 6, 51, and 93). The United States (U.S.) Navy published *Clean Air Act Conformity Guidance* in Appendix F, OPNAVINST 5090.1C, dated 30 October 2007. These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal Agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1 51.850[a]).

Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 51.853[b]). *De minimis* levels (in tons/year) for the air basin potentially affected by the Proposed Action are listed in Table 1.

Table 1
***De minimis* Levels for Criteria Pollutants in the San Diego Air Basin**

| Criteria Pollutant | <i>De minimis</i> Level (tons/year) |
|---------------------------------------|--------------------------------------------|
| Carbon Monoxide (CO) | 100 |
| Volatile Organic Compounds (VOC) | 100 |
| Oxides of Nitrogen (NO _x) | 100 |

PROPOSED ACTION

Action Proponent: U.S. Navy

Location: Marine Corps Base Camp Pendleton

Proposed Action Name: Joint Logistics Over the Shore, Maritime Prepositioning Force, and Field Exercise Training

Proposed Action and Emissions Summary: The purpose of executing amphibious training exercises is to provide an opportunity for west coast Navy, Marine Corps, and Army personnel to gain and improve amphibious warfighting competencies at a west coast location that allows for the focused assemblage and execution of logistics movement from the offload to locations inland. These exercises also provide the Navy and the Marine Corps an opportunity to integrate as an amphibious warfare team to move Marines from ships afloat to areas inland to support the Range of Military Operations associated with amphibious warfare training.

Navy, Marine Corps, and Army units need to conduct realistic routine amphibious training exercises to ensure continued combat readiness. Amphibious training exercises allow military commands to practice their individual skills as well as prepare for joint operations, where multiple units, multiple commands, and multiple services work together under a single commander in a realistic setting. The training aims to validate, enhance, and refine military tactics, techniques, procedures, and doctrine for these operations, which ultimately provides the U.S. military the capability to move combat power across the surf zone, on to land, and to areas inland.

Air Emissions Summary: The Proposed Action would result in air emissions from training activities. There would be no permanent construction associated with the proposed action. Based on the air quality analysis for the proposed action, the maximum net increase in emissions when compared with baseline conditions would be below conformity *de minimis* levels (Table 2).

Table 2
Estimated Total Net Project Emissions - Tons per Year

| Activity | Pollutant | | |
|-----------------------------------------------------------------|-----------|------|-----------------|
| | CO | VOC | NO _x |
| Proposed Action Emissions | 34.36 | 5.50 | 57.83 |
| General Conformity <i>de minimis</i> Thresholds (Tons per year) | 100 | 100 | 100 |
| Exceeds Conformity <i>de minimis</i> threshold? | No | No | No |

Date RONA prepared: 9 August 2013

EMISSIONS EVALUATION AND CONCLUSION

The Navy concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting that conclusion is shown in Table 2 above, which is a summary of the calculations, methodology, data, and references included in the attachment to the RONA. Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this Record of Non-Applicability.

RONA APPROVAL

Date: _____

Signature: _____

Operations and Description

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year | |
|----------|----------------------------|--------------------------|----------------|------------------|----------------|---------------------------|------------------|-----------------|----------------------------|-------------------|--------------|----------------------------|-------------------|---|
| 1 | Field Exercises | | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | | |
| | | | | | | OUBs | 2 | 2 | | | | | | |
| | | | | | | LCU | 2 | 2 | | | | | | |
| | | | | | | Barge Ferry | 4 | 4 | | | | | | |
| | | | | | | Warping Tug | 4 | 4 | | | | | | |
| | | | | | | LCM-8 | 2 | 2 | | | | | | |
| | | | | | | Barge Ferry | 1 | 1 | | | | | | |
| | | | | | | Warping Tug | 1 | 1 | | | | | | |
| | | | | | | LCACs | 2 | 2 | | | | | | |
| | | Beach Activities | | | | | | | | | | | | |
| | | | | | | | | | HMMWVs | 2 | | | | |
| | | | | | | | | | Dozer | 1 | | | | |
| | | | | | | | | | LARCV | 2 | | | | |
| | | Upland Activities | | | | | | | | | | | | |
| | | | | | | | | | HMMWVs | 25 | | | | |
| | | | | | | | | | 4WD Pickups | 14 | | | | |
| | | | | | | | | | Fuel Truck | 1 | | | | |
| | | | | | | | | | Generators/various | 10 | | | | |
| | | | | | | | | | Light Units | 6 | | | | |
| | | | | | | | | | Bus | 2 | | | | |
| | | | | | | | | | Van | 3 | | | | |
| | | Air Activities | | | | | | | | | | | | |
| | | | | | | | | | | | CH-53E/MV-22 | 0 | 0 | |
| | | | | | | | | | | | CH-46E/MV-22 | 0 | 0 | |
| 2 | MPF | | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | | |
| | | | | | | MPF Utility Boat | 1 | 1 | | | | | | |
| | | | | | | OUBs | 2 | 2 | | | | | | |
| | | | | | | LCU | 2 | 2 | | | | | | |
| | | | | | | Barge Ferry | 4 | 4 | | | | | | |
| | | | | | | Warping Tug | 4 | 4 | | | | | | |
| | | | | | | LCM-8 | 2 | 2 | | | | | | |
| | | | | | | WTs | 1 | 1 | HMMWVs/Jeeps | 3 | 3 | None | 0 | 0 |
| | | | | | | Personal Watercraft | 1 | 1 | 6-ton truck | 1 | 1 | | | |
| | | | | | | | 1 | 1 | Dozer | 1 | 1 | | | |
| | | | | | | | | | Cranes | 2 | 2 | | | |
| | | | | | | | | | RTVs | 2 | 2 | | | |
| | | | | | | | | | LARCV | 2 | 2 | | | |
| | | OPDS | | | | | | | | | | | | |
| | | | | | | OUBs | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | | LARCV | 2 | 2 | | | |
| | | ABLTS | | | | | | | | | | | | |
| | | | | | | Barge Ferry | 1 | 1 | | | | | | |
| | | | | | Warping Tug | 1 | 1 | | | | | | | |
| | IPDS | | | | | | | | | | | | | |
| | | | | | OUBs | 1 | 1 | HMMWVs | 1 | 1 | | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | | |

Table NAA-1
Operations Summaries
No Action Alternative

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year |
|----------|-------------------------------------|--------------------|----------------|------------------|---------------------|---------------------------|------------------|--------------------|----------------------------|-------------------|--------------|----------------------------|-------------------|
| | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |
| | Tactical Craft | | | | LCU | 1 | 1 | | | | | | |
| | Littoral Activities | | | | | | | | | | | | |
| | Security Boats | | | | MPF Utility Boat | 2 | 2 | | | | | | |
| | Beach Activities | | | | | | | HMMWVs | 5 | | UAV | 2 | 2 |
| | | | | | | | | 5-ton truck | 20 | | | | |
| | | | | | | | | Dozer | 3 | | | | |
| | | | | | | | | LARCV | 2 | | | | |
| | | | | | | | | AAVs | 10 | | | | |
| | | | | | | | | Fuel Truck | 1 | | | | |
| | Upland Activities | | | | | | | HMMWVs | 47 | 47 | | | |
| | | | | | | | | 4WD Pickups | 18 | 18 | | | |
| | | | | | | | | Fuel Truck | 3 | 3 | | | |
| | | | | | | | | Generators/various | 15 | 15 | | | |
| | | | | | | | | Light Units | 6 | 6 | | | |
| | | | | | | | | Bus | 5 | 5 | | | |
| | | | | | | | | Van | 5 | 5 | | | |
| | Air Activities | | | | | | | | | | CH-53E/MV-22 | 1 | 1 |
| | | | | | | | | | | | CH-46E/MV-22 | 1 | 1 |
| 3 | JLOTS | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | |
| | MPF Ships | | | | MPF Utility Boat | 3 | 3 | | | | | | |
| | UB | | | | OUBs | 3 | 3 | | | | | | |
| | LCU 1600/2000 | | | | LCU | 4 | 4 | | | | | | |
| | INLS Causeway "Ferries | | | | Barge Ferry | 4 | 4 | | | | | | |
| | INLS Warping Tugs | | | | Warping Tug | 4 | 4 | | | | | | |
| | MCS | | | | LCU | 2 | 2 | | | | | | |
| | LSV | | | | LCU | 1 | 1 | | | | | | |
| | LCM 8s | | | | LCM-8 | 1 | 1 | | | | | | |
| | Roll-on/Roll-off Discharge Facility | | | | LCM-8 | 4 | 4 | | | | | | |
| | | | | | WTs | 2 | 2 | HMMWVs/Jeeps | 3 | 3 | None | 0 | 0 |
| | | | | | Personal Watercraft | 2 | 2 | 6-ton truck | 1 | 1 | | | |
| | | | | | | | | Dozer | 1 | 1 | | | |
| | | | | | | | | Cranes | 2 | 2 | | | |
| | | | | | | | | RTVs | 2 | 2 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |
| | Tugs | | | | Warping Tug | 2 | 2 | | | | | | |
| | OPDS | | | | OUBs | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |
| | ABLTS | | | | Barge Ferry | 1 | 1 | | | | | | |
| | | | | | Warping Tug | 1 | 1 | | | | | | |
| | IPDS | | | | OUBs | 1 | 1 | HMMWVs | 1 | 1 | | | |

Table NAA-1
Operations Summaries
No Action Alternative

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year |
|----------|----------------------------------|--------------------|----------------|------------------|---------------------|---------------------------|------------------|------------------------|----------------------------|-------------------|--------------|----------------------------|-------------------|
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |
| | Tactical Craft | | | | LCU | 3 | 3 | | | | | | |
| | Littoral Activities | | | | | | | | | | | | |
| | Elevated Causeway System (ELCAS) | | | | WTs | 1 | 1 | HMMWVs | 2 | 2 | None | 0 | 0 |
| | | | | | Personal Watercraft | 1 | 1 | 5-ton truck | 2 | 2 | | | |
| | | | | | LCM | 1 | 1 | Light Trucks | 2 | 2 | | | |
| | | | | | | | | Dozers | 1 | 1 | | | |
| | | | | | | | | Forklifts | 1 | 1 | | | |
| | | | | | | | | 75-Ton Crane | 1 | 1 | | | |
| | | | | | | | | Pile Driver | 1 | 1 | | | |
| | | | | | | | | ambulance | 1 | 1 | | | |
| | | | | | | | | water buffalo | 1 | 1 | | | |
| | | | | | | | | 140-ton crane | 1 | 1 | | | |
| | | | | | | | | 30-ton crane | 1 | 1 | | | |
| | | | | | | | | LARCV | 1 | 1 | | | |
| | | | | | | | | Air compressors | 1 | 1 | | | |
| | | | | | | | | Pile Extractor | 1 | 1 | | | |
| | TRIDENT Pier | | | | WTs | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Van | 1 | 1 | | | |
| | | | | | | | | Rough Terrain Forklift | 1 | 1 | | | |
| | | | | | | | | Dozers | 1 | 1 | | | |
| | | | | | | | | LARCV | 1 | 1 | | | |
| | Floating Causeway | | | | Barge Ferry | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Van | 1 | 1 | | | |
| | | | | | | | | Dozer | 1 | 1 | | | |
| | | | | | | | | LARCV | 1 | 1 | | | |
| | Security Boats | | | | MPF Utility Boat | 2 | 2 | | | | | | |
| | | | | | | 2 | 2 | | | | | | |
| | SLWT | | | | WTs | 2 | 2 | | | | | | |
| | Beach Activities | | | | | | | HMMWVs | 10 | | UAV | 11 | 11 |
| | | | | | | | | 5-ton truck | 40 | | | | |
| | | | | | | | | Dozer | 5 | | | | |
| | | | | | | | | LARCV | 4 | | | | |
| | | | | | | | | AAVs | 10 | | | | |
| | | | | | | | | Fuel Truck | 2 | | | | |
| | Upland Activities | | | | | | | HMMWVs | 119 | 119 | | | |
| | | | | | | | | 4WD Pickups | 50 | 50 | | | |
| | | | | | | | | Fuel Truck | 5 | 5 | | | |
| | | | | | | | | Generators/various | 36 | 36 | | | |
| | | | | | | | | Light Units | 17 | 17 | | | |
| | | | | | | | | Bus | 8 | 8 | | | |
| | | | | | | | | Van | 8 | 8 | | | |
| | Air Activities | | | | | | | | | | CH-53E/MV-22 | 2 | 2 |
| | | | | | | | | | | | CH-46E/MV-22 | 2 | 2 |

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year | |
|----------------------------------|------------------------|--------------------|----------------|------------------|------------------|---------------------------|------------------|-----------------|----------------------------|-------------------|----------|----------------------------|-------------------|---|
| 4 Dawn Blitz Training Activities | MPF Ships | | | | MPF Utility Boat | 3 | 3 | | | | | | | |
| | LCU 1600/2000 | | | | LCU | 4 | 4 | | | | | | | |
| | INLS Causeway "Ferries | | | | Barge Ferry | 4 | 4 | | | | | | | |
| | INLS Warping Tugs | | | | Warping Tug | 4 | 4 | | | | | | | |
| | MCS | | | | LCU | 2 | 2 | | | | | | | |
| | Beach Activities | | | | | CRRCs | 10 | 10 | HMMWVs | 6 | 6 | | | |
| | | | | | | LPD | 4 | 4 | 4WD Pickups | 6 | 6 | | | |
| | | | | | | LCUs | 4 | 4 | AAVs | 18 | 18 | | | |
| | | | | | | LCACs | 4 | 4 | LAVs | 6 | 6 | | | |
| | | | | | | | | | IFAVs | 6 | 6 | | | |
| | Air Activities | | | | | | | | | | | CH-53E/MV-22 | 2 | 2 |
| | | | | | | | | | | | | CH-46E/MV-22 | 2 | 2 |

NAA Operations and Description

| Scenario | Type Training | Days (a) | Operations (b) | Aircraft | Number | Aircraft Time on Range (hrs) | Emissions Factors (lb/operation) | | | | | | Emissions (lbs) | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|-------------------|----------|----------------|----------|--------|------------------------------|----------------------------------|----|-----|-----|-----|------|-----------------|--------------|-------------|-------------|-------------|---------------|-------|------------------|----|---|--------------|----|-----|------|------|------|------|------|--------|-------------|---------------|-------------|-------------|--------------|----------------|
| | | | | | | | Hours | CO | NOx | ROG | SOx | PM10 | PM2.5 | CO | Nox | ROG | Sox | PM10 | PM2.5 | | | | | | | | | | | | | | | | | | |
| 2 | MPF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | Air Activities | 30 | 6 | CH-53E/MV-22 | 1 | 1.0 | 0.32 | 6.93 | 0.01 | 0.21 | 0.83 | 0.8051 | 1.92 | 41.58 | 0.06 | 1.26 | 4.98 | 4.8306 |
| | | | | | | | | | | | | | | | | | | | | | | | CH-46E/MV-22 | 1 | 1.0 | 0.32 | 6.93 | 0.01 | 0.21 | 0.83 | 0.8051 | 1.92 | 41.58 | 0.06 | 1.26 | 4.98 | 4.8306 |
| | | | | | | | | | | | | | | | | | | | | Total | | | | | | | | | | | | 3.84 | 83.16 | 0.12 | 2.52 | 9.96 | 9.6612 |
| 3 | JLOTS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | Beach Activities | | | UAV | 11 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | Air Activities | 90 | 3 | CH-53E/MV-22 | 2 | 1.0 | 0.32 | 6.93 | 0.01 | 0.21 | 0.83 | 0.8051 | 1.92 | 41.58 | 0.06 | 1.26 | 4.98 | 4.8306 |
| | | | | | | | | | | | | | | | | | | | | | | | CH-46E/MV-22 | 2 | 1.0 | 0.32 | 6.93 | 0.01 | 0.21 | 0.83 | 0.8051 | 1.92 | 41.58 | 0.06 | 1.26 | 4.98 | 4.8306 |
| Total | | | | | | | | | | | | | 3.84 | 83.16 | 0.12 | 2.52 | 9.96 | 9.6612 | | | | | | | | | | | | | | | | | | | |
| 4 | Dawn Blitz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | Air Activities | 21 | 4 | CH-53E/MV-22 | 2 | 1.0 | 0.32 | 6.93 | 0.01 | 0.21 | 0.83 | 0.8051 | 2.56 | 55.44 | 0.08 | 1.68 | 6.64 | 6.4408 |
| | | | | | | | | | | | | | | | | | | | | | | | CH-46E/MV-22 | 2 | 1.0 | 0.32 | 6.93 | 0.01 | 0.21 | 0.83 | 0.8051 | 2.56 | 55.44 | 0.08 | 1.68 | 6.64 | 6.4408 |
| | | | | | | | | | | | | | | | | | | | | Total | | | | | | | | | | | | 5.12 | 110.88 | 0.16 | 3.36 | 13.28 | 12.8816 |

Assumptions: Assume that MV-22 operations are Special Personnel Insertion and Extraction Rig operations.
 Assume all aircraft will eventually be MV-22s
 Source: AESO Memorandum 9655.
 Assume MV-22s will participate in 12 operations per day during exercise.
 PM2.5 calculated as 97% of PM10 emissions, in accordance with EPA OTAQ/OAQPS guidance, Commercial Marine, Airports, and Trains Approach, EPA Docket #OAR-2003-0053-1696.

(a) Days = the number of days per operation
 (b) Operations = the number of operations per year

| Scenario Type/Training | Reference Days (e) | Operations (b) | Ship/Boat Type | Number | Ship Time on Range (hrs) (e) | | | | Ave. Speed (Knots) | Power Level (%) or horsepower | Engines on Line | Generator - Load (kW) | Emissions Factors (lb/hr) (c) | | | | | | Emissions, (lbs/year) | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|---------------------|--------|------------------------------|---------------------------------|-----------|----------------------------|--------------------|-------------------------------|-----------------|-----------------------|-------------------------------|------------------|------------------|-----------------|-----------------|-----------------|-----------------------|-----------|-----------|----------|----------|----------|-----------|
| | | | | | Propulsion | | Generator | | | | | | CO | NOx | ROG | SOx | PM10 | PM2.5 | CO | Nox | ROG | Sox | PM10 | PM2.5 | |
| | | | | | Hours | No. | No. | No. | | | | | | | | | | | | | | | | | |
| Tactical Craft | 49 | 0.25 | LCU | 3 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7KW ea | 36.21 | 44.95 | 0.52 | 3.11 | 1.57 | 1.5229 | 5322.87 | 6607.65 | 76.44 | 457.17 | 230.79 | 223.8663 |
| Littoral Activities Elevated Causeway System (ELCAS) | 32 | 0.25 | WTs | 1 | 4 | Foster Wheeler/Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 1.85 | 10.89 | 1.38 | 32.76 | 6.57 | 6.376985 | 59.052567 | 348.41014 | 44.28943 | 1048.183 | 210.3748 | 204.06353 |
| | 32 | 0.25 | Personal Watercraft | 1 | 4 | Yamaha Outboard, 160 hp (d) | 1 | None | 0 | 2 | 100% | 1 | NA | 26.13109 | 2.500937 | 14.9774 | 0.006349 | 3.591614 | 3.483865 | 836.1948 | 80.029983 | 479.2769 | 0.203179 | 114.9316 | 111.48369 |
| | 32 | 0.25 | LCM | 1 | 2 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7KW ea | 36.21 | 44.95 | 0.52 | 3.11 | 1.57 | 1.5229 | 579.36 | 719.2 | 8.32 | 49.76 | 25.12 | 24.3664 |
| TRIDENT Pier | 32 | 0.25 | WTs | 1 | 4 | Foster Wheeler/Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 1.85 | 10.89 | 1.38 | 32.76 | 6.57 | 6.376985 | 59.052567 | 348.41014 | 44.28943 | 1048.183 | 210.3748 | 204.06353 |
| Floating Causeway | 32 | 0.25 | Barge Ferry | 1 | 4 | Foster Wheeler/Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 1.85 | 10.89 | 1.38 | 32.76 | 6.57 | 6.376985 | 59.052567 | 348.41014 | 44.28943 | 1048.183 | 210.3748 | 204.06353 |
| Security Boats SLWT | 32 | 0.25 | MPF Utility Boat | 2 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 20.46 | 4.4088 | 1.659306 | 1.353 | 1.452 | 1.40844 | 1309.44 | 282.1632 | 106.1956 | 86.592 | 92.928 | 90.14016 |
| | 32 | 0.25 | WTs | 2 | 4 | Foster Wheeler/Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 1.85 | 10.89 | 1.38 | 32.76 | 6.57 | 6.376985 | 118.10513 | 696.82029 | 88.57885 | 2096.366 | 420.7495 | 408.12705 |
| Total | | | | | | | | | | | | | | 38316.972 | 45933.325 | 3792.823 | 28275.36 | 7152.653 | 6938.0737 | | | | | | |
| 4 Dawn Blitz Training Activities MPF Ships LCU 1600/2000 INLS Causeway *Ferries INLS Warping Tugs MCS | 21 | 4 | MPF Utility Boat | 3 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 20.46 | 4.4088 | 1.659306 | 1.353 | 1.452 | 1.40844 | 20623.68 | 4444.0704 | 1672.58 | 1363.824 | 1463.616 | 1419.7075 |
| | 21 | 4 | LCU | 4 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7KW ea | 36.21 | 44.95 | 0.52 | 3.11 | 1.57 | 1.5229 | 48666.24 | 60412.8 | 698.88 | 4179.84 | 2110.08 | 2046.7776 |
| | 21 | 4 | Barge Ferry | 4 | 4 | Foster Wheeler/Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 1.85 | 10.89 | 1.38 | 32.76 | 6.57 | 6.376985 | 2480.2078 | 14633.226 | 1860.156 | 44023.69 | 8835.74 | 8570.6681 |
| | 21 | 4 | Warping Tug | 4 | 4 | Foster Wheeler/Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 1.85 | 10.89 | 1.38 | 32.76 | 6.57 | 6.376985 | 2480.2078 | 14633.226 | 1860.156 | 44023.69 | 8835.74 | 8570.6681 |
| | 21 | 4 | LCU | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7KW ea | 36.21 | 44.95 | 0.52 | 3.11 | 1.57 | 1.5229 | 24333.12 | 30206.4 | 349.44 | 2089.92 | 1055.04 | 1023.3888 |

NAA Operations and Description

| Scenario | Type Training | Days (a) | Operations (b) | Ground Vehicles | Number | Engine Load | Hours per day | Horsepower | Emissions Factors (lb/hr) | | | | | | Emissions (lbs) | | | | | |
|----------|-------------------------------------|----------|----------------|-----------------|--------|-------------|---------------|------------|---------------------------|-----------------|----------------|----------------|----------------|----------------|-----------------|----------|---------|---------|---------|---------|
| | | | | | | | | | CO | NOx | ROG | SOx | PM10 | PM2.5 | CO | Nox | ROG | Sox | PM10 | PM2.5 |
| | | | | | | | | | | | | | | | | | | | | |
| 1 | Field Exercises | | | | | | | | | | | | | | | | | | | |
| | Beach Activities | 14 | 8 | HMMWVs | 2 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 80.75 | 901.35 | 262.89 | 83.56 | 75.11 | 72.86 |
| | | 14 | 8 | Dozer | 1 | 59% | 8 | 240.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 730.04 | 2318.79 | 260.13 | 1.68 | 137.62 | 133.49 |
| | | 14 | 8 | LARCV | 2 | | 2 | 350.0 | 10.85 | 2.338 | 0.879935 | 0.7175 | 0.77 | 0.75 | 4860.80 | 1047.42 | 394.21 | 321.44 | 344.96 | 334.61 |
| | Upland Activities | 14 | 8 | HMMWVs | 25 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 1009.32 | 11266.86 | 3286.17 | 1044.53 | 938.90 | 910.74 |
| | | 14 | 8 | 4WD Pickups | 14 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 633.47 | 53.00 | 37.95 | 0.72 | 3.21 | 3.12 |
| | | 14 | 8 | Fuel Truck | 1 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 45.25 | 3.79 | 2.71 | 0.05 | 0.23 | 0.22 |
| | | 14 | 8 | Generators/vari | 10 | 30% | 24 | Various | 11.98 | 55.59 | 4.52 | 3.67 | 3.93 | 3.81 | 9658.68 | 44830.16 | 3648.09 | 2956.00 | 3165.88 | 3070.90 |
| | | 14 | 8 | Light Units | 6 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 271.49 | 22.71 | 16.26 | 0.31 | 1.38 | 1.34 |
| | | 14 | 8 | Bus | 2 | | 2 | | 0.21 | 0.74 | 0.04 | 0.00 | 0.02 | 0.02 | 91.84 | 331.79 | 18.41 | 0.39 | 7.48 | 7.26 |
| | | 14 | 8 | Van | 3 | | 8 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 542.98 | 45.43 | 32.52 | 0.62 | 2.76 | 2.67 |
| | Total | | | | | | | | 17924.62 | 60821.30 | 7959.34 | 4409.31 | 4677.53 | 4537.20 | | | | | | |
| 2 | MPF | | | | | | | | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | | | | | | | | |
| | Roll-on/Roll-off Discharge Facility | 30 | 0.5 | HMMWVs/Jeeps | 3 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 16.22 | 181.07 | 52.81 | 16.79 | 15.09 | 14.64 |
| | | 30 | 0.5 | 6-ton truck | 1 | 80% | 1 | | 0.25 | 0.30 | 0.02 | 0.00 | 0.01 | 0.01 | 2.94 | 3.57 | 0.25 | 0.01 | 0.17 | 0.17 |
| | | 30 | 0.5 | Dozer | 1 | 59% | 8 | 240.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 97.77 | 310.55 | 34.84 | 0.22 | 18.43 | 17.88 |
| | | 30 | 0.5 | Cranes | 2 | 43% | 8 | 94.0 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 41.92 | 150.35 | 14.97 | 0.13 | 5.77 | 5.60 |
| | | 30 | 0.5 | RTVs | 2 | 48% | 8 | 93.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 96.77 | 176.47 | 29.92 | 0.16 | 16.13 | 15.64 |
| | | 30 | 0.5 | LARCV | 2 | | 2 | 350.0 | 10.85 | 2.338 | 0.879935 | 0.7175 | 0.77 | 0.75 | 651.00 | 140.28 | 52.80 | 43.05 | 46.20 | 44.81 |
| | OPDS | 15 | 0.5 | HMMWVs | 1 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 2.70 | 30.18 | 8.80 | 2.80 | 2.51 | 2.44 |
| | | 15 | 0.5 | 5-ton truck | 1 | 80% | 1 | | 0.25 | 0.30 | 0.02 | 0.00 | 0.01 | 0.01 | 1.47 | 1.79 | 0.13 | 0.00 | 0.09 | 0.08 |
| | | 15 | 0.5 | Dozer | 2 | 59% | 8 | 240.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 97.77 | 310.55 | 34.84 | 0.22 | 18.43 | 17.88 |
| | | 15 | 0.5 | Comm Van | 1 | | 8 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 12.12 | 1.01 | 0.73 | 0.01 | 0.06 | 0.06 |
| | | 15 | 0.5 | RTV forklift | 1 | 48% | 8 | 93.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 24.19 | 44.12 | 7.48 | 0.04 | 4.03 | 3.91 |
| | | 15 | 0.5 | LARCV | 2 | | 2 | 350.0 | 10.85 | 2.338 | 0.879935 | 0.7175 | 0.77 | 0.75 | 325.50 | 70.14 | 26.40 | 21.53 | 23.10 | 22.41 |
| | IPDS | 15 | 0.5 | HMMWVs | 1 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 2.70 | 30.18 | 8.80 | 2.80 | 2.51 | 2.44 |
| | | 15 | 0.5 | 5-ton truck | 1 | 80% | 1 | | 0.25 | 0.30 | 0.02 | 0.00 | 0.01 | 0.01 | 1.47 | 1.79 | 0.13 | 0.00 | 0.09 | 0.08 |
| | | 15 | 0.5 | Dozer | 2 | 59% | 8 | 240.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 97.77 | 310.55 | 34.84 | 0.22 | 18.43 | 17.88 |
| | | 15 | 0.5 | Comm Van | 1 | | 8 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 12.12 | 1.01 | 0.73 | 0.01 | 0.06 | 0.06 |
| | | 15 | 0.5 | RTV forklift | 1 | 48% | 8 | 93.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 24.19 | 44.12 | 7.48 | 0.04 | 4.03 | 3.91 |
| | | 15 | 0.5 | LARCV | 2 | | 2 | 350.0 | 10.85 | 2.338 | 0.879935 | 0.7175 | 0.77 | 0.75 | 325.50 | 70.14 | 26.40 | 21.53 | 23.10 | 22.41 |
| | Beach Activities | 30 | 0.5 | HMMWVs | 5 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 27.04 | 301.79 | 88.02 | 27.98 | 25.15 | 24.39 |
| | | 30 | 0.5 | 5-ton truck | 20 | 80% | 1 | | 0.25 | 0.30 | 0.02 | 0.00 | 0.01 | 0.01 | 58.85 | 71.47 | 5.07 | 0.11 | 3.43 | 3.33 |
| | | 30 | 0.5 | Dozer | 3 | 59% | 8 | 240.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 293.32 | 931.66 | 104.52 | 0.67 | 55.29 | 53.63 |
| | | 30 | 0.5 | LARCV | 2 | | 2 | 350.0 | 10.85 | 2.338 | 0.879935 | 0.7175 | 0.77 | 0.75 | 651.00 | 140.28 | 52.80 | 43.05 | 46.20 | 44.81 |
| | | 30 | 0.5 | AAVs | 10 | | 2 | | 0.444918 | 1.0 | 0.2 | 0.1 | 0.2 | 0.17 | 133.48 | 310.82 | 52.23 | 15.44 | 53.74 | 52.13 |
| | | 30 | 0.5 | Fuel Truck | 1 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 6.06 | 0.51 | 0.36 | 0.01 | 0.03 | 0.03 |
| | Upland Activities | 30 | 0.5 | HMMWVs | 47 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 254.13 | 2836.83 | 827.41 | 263.00 | 236.40 | 229.31 |
| | | 30 | 0.5 | 4WD Pickups | 18 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 109.08 | 9.13 | 6.53 | 0.12 | 0.55 | 0.54 |
| | | 30 | 0.5 | Fuel Truck | 3 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 18.18 | 1.52 | 1.09 | 0.02 | 0.09 | 0.09 |
| | | 30 | 0.5 | Generators/vari | 15 | 30% | 24 | Various | 11.98 | 55.59 | 4.52 | 3.67 | 3.93 | 3.81 | 1293.57 | 6004.04 | 488.58 | 395.89 | 424.00 | 411.28 |
| | | 30 | 0.5 | Light Units | 6 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 36.36 | 3.04 | 2.18 | 0.04 | 0.18 | 0.18 |
| | | 30 | 0.5 | Bus | 5 | | 2 | | 0.21 | 0.74 | 0.04 | 0.00 | 0.02 | 0.02 | 30.75 | 111.09 | 6.17 | 0.13 | 2.51 | 2.43 |
| | | 30 | 0.5 | Van | 5 | | 8 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 121.20 | 10.14 | 7.26 | 0.14 | 0.62 | 0.60 |
| | Total | | | | | | | | 4867.16 | 12610.20 | 1984.55 | 856.18 | 1046.44 | 1015.05 | | | | | | |
| 3 | JLOTS | | | | | | | | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | | | | | | | | |
| | Roll-on/Roll-off Discharge Facility | 49 | 0.25 | HMMWVs/Jeeps | 3 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 13.25 | 147.88 | 43.13 | 13.71 | 12.32 | 11.95 |
| | | 49 | 0.25 | 6-ton truck | 1 | 80% | 1 | | 0.25 | 0.30 | 0.02 | 0.00 | 0.01 | 0.01 | 2.40 | 2.92 | 0.21 | 0.00 | 0.14 | 0.14 |
| | | 49 | 0.25 | Dozer | 1 | 59% | 8 | 240.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 79.85 | 253.62 | 28.45 | 0.18 | 15.05 | 14.60 |
| | | 49 | 0.25 | Cranes | 2 | 43% | 8 | 94.0 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 34.23 | 122.78 | 12.23 | 0.10 | 4.72 | 4.57 |
| | | 49 | 0.25 | RTVs | 2 | 48% | 8 | 93.0 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 79.03 | 144.12 | 24.43 | 0.13 | 13.17 | 12.78 |
| | | 49 | 0.25 | LARCV | 2 | | 2 | 350.0 | 10.85 | 2.338 | 0.879935 | 0.7175 | 0.77 | 0.75 | 531.65 | 114.56 | 43.12 | 35.16 | 37.73 | 36.60 |

| Scenario | Type Training | Days (a) | Operations (b) | Ground Vehicles | Number | Engine Load | Hours per day | Horsepower | Emissions Factors (lb/hr) | | | | | | Emissions (lbs) | | | | | |
|----------|---------------|----------|----------------|-----------------|--------|-------------|---------------|------------|---------------------------|----------------|----------------|---------------|---------------|---------------|-----------------|---------|--------|--------|--------|--------|
| | | | | | | | | | CO | NOx | ROG | SOx | PM10 | PM2.5 | CO | Nox | ROG | Sox | PM10 | PM2.5 |
| | | 21 | 4 | HMMWVs | 6 | 65% | 3 | | 0.18 | 2.06 | 0.60 | 0.19 | 0.17 | 0.17 | 181.68 | 2028.03 | 591.51 | 188.02 | 169.00 | 163.93 |
| | | 21 | 4 | 4WD Pickups | 6 | | 2 | | 0.20 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 203.62 | 17.04 | 12.20 | 0.23 | 1.03 | 1.00 |
| | | 21 | 4 | AAVs | 18 | | 2 | | 0.444918 | 1.0 | 0.2 | 0.1 | 0.2 | 0.17 | 1345.43 | 3133.09 | 526.45 | 155.68 | 541.67 | 525.42 |
| | | 21 | 4 | LAVs | 6 | 65% | 2 | | 0.04 | 0.06 | 0.01 | 0.00 | 0.01 | 0.01 | 28.93 | 42.43 | 5.60 | 0.11 | 3.97 | 3.85 |
| | | 21 | 4 | IFAVs | 6 | 65% | 2 | | 0.04 | 0.06 | 0.01 | 0.00 | 0.01 | 0.01 | 28.93 | 42.43 | 5.60 | 0.11 | 3.97 | 3.85 |
| | | | | | | | | | 1788.58 | 5263.02 | 1141.35 | 344.14 | 719.66 | 698.07 | | | | | | |

PM2.5 calculated as 97% of PM10 emissions, in accordance with EPA OTAQ/OAQPS guidance, Commercial Marine, Airports, and Trains Approach, EPA Docket #OAR-2003-0053-1696.
Assumptions: Fuel truck is equivalent to 4WD vehicle; large trucks modeled as MDTs. Busses assumed to be diesel powered
Emission factors from ARB's OFFROAD 2007 Model

| Activity | Annual Activity Emissions, tons/year | | | | | |
|-------------------------|--------------------------------------|---------------|--------------|---------------|--------------|--------------|
| | CO | NOx | ROG | SOx | PM10 | PM2.5 |
| Field Exercises | | | | | | |
| Marine Vessels | 45.10 | 75.62 | 3.69 | 77.55 | 16.55 | 16.05 |
| Ground Vehicles | 8.96 | 30.41 | 3.98 | 2.20 | 2.34 | 2.27 |
| Total, tons/year | 54.06 | 106.03 | 7.67 | 79.75 | 18.89 | 18.32 |
| MPF | | | | | | |
| Marine Vessels | 10.78 | 13.18 | 1.12 | 10.60 | 2.54 | 2.46 |
| Ground Vehicles | 2.43 | 6.31 | 0.99 | 0.43 | 0.52 | 0.51 |
| Aircraft | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total, tons/year | 13.22 | 19.52 | 2.12 | 11.03 | 3.07 | 2.98 |
| JLOTS | | | | | | |
| Marine Vessels | 19.16 | 22.97 | 1.90 | 14.14 | 3.58 | 3.47 |
| Ground Vehicles | 4.64 | 13.59 | 2.59 | 0.98 | 1.12 | 1.08 |
| Aircraft | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total, tons/year | 23.80 | 36.60 | 4.49 | 15.12 | 4.70 | 4.56 |
| Dawn Blitz | | | | | | |
| Marine Vessels | 89.59 | 95.93 | 12.29 | 52.37 | 14.61 | 14.18 |
| Ground Vehicles | 0.89 | 2.63 | 0.57 | 0.17 | 0.36 | 0.35 |
| Aircraft | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.01 |
| Total, tons/year | 90.48 | 98.62 | 12.86 | 52.54 | 14.98 | 14.53 |
| Grand Total | 181.56 | 260.77 | 27.13 | 158.44 | 41.63 | 40.38 |

Assumptions: Field exercises - 8 per year, 14 days per exercise
 MPF - 1 exercise every other year (0.5 exercise per year), 30 days per exercise
 JLOTS - 1 exercise every four years (0.25 exercise per year), 90 days per exercise
 Dawn Blitz - 4 exercises per year, 21 days per exercise

Operations and Description

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year | |
|----------|----------------------------|-------------------------------------|----------------|---------------------|----------------|---------------------------|------------------|-----------------|----------------------------|-------------------|--------------|----------------------------|-------------------|---|
| 1 | Field Exercises | | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | | |
| | | Ubs | | OUBs | | | 2 | 2 | | | | | | |
| | | LCU 1600/2000 | | LCU | | | 2 | 2 | | | | | | |
| | | INLS Causeway "Ferries | | Barge Ferry | | | 4 | 4 | | | | | | |
| | | INLS Warping Tugs | | Warping Tug | | | 4 | 4 | | | | | | |
| | | LCM 8s | | LCM-8 | | | 2 | 2 | | | | | | |
| | | ABLTS | | Barge Ferry | | | 1 | 1 | | | | | | |
| | | | | Warping Tug | | | 1 | 1 | | | | | | |
| | | LCACs | | LCACs | | | 2 | 2 | | | | | | |
| | | Beach Activities | | | | | | | | | | | | |
| | | | | | | | | | HMMWVs | 2 | | | | |
| | | | | | | | | | Dozer | 1 | | | | |
| | | | | | | | | | LARCV | 2 | | | | |
| | | Upland Activities | | | | | | | | | | | | |
| | | | | | | | | | HMMWVs | 25 | | | | |
| | | | | | | | | | 4WD Pickups | 14 | | | | |
| | | | | | | | | | Fuel Truck | 1 | | | | |
| | | | | | | | | | Generators/various | 10 | | | | |
| | | | | | | | | | Light Units | 6 | | | | |
| | | | | | | | | Bus | 2 | | | | | |
| | | | | | | | | Van | 3 | | | | | |
| | Air Activities | | | | | | | | | | | | | |
| | | | | | | | | | | | CH-53E/MV-22 | 0 | 0 | |
| | | | | | | | | | | | CH-46E/MV-22 | 0 | 0 | |
| 2 | MPF | | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | | |
| | | MPF Ships | | MPF Utility Boat | | | 1 | 1 | | | | | | |
| | | UB | | OUBs | | | 2 | 2 | | | | | | |
| | | LCU 1600/2000 | | LCU | | | 2 | 2 | | | | | | |
| | | INLS Causeway "Ferries | | Barge Ferry | | | 4 | 4 | | | | | | |
| | | INLS Warping Tugs | | Warping Tug | | | 4 | 4 | | | | | | |
| | | LCM 8s | | LCM-8 | | | 2 | 2 | | | | | | |
| | | Roll-on/Roll-off Discharge Facility | | WTs | | | 1 | 1 | HMMWVs/Jeeps | 3 | 3 | None | 0 | 0 |
| | | | | Personal Watercraft | | | 1 | 1 | 6-ton truck | 1 | 1 | | | |
| | | | | | | | 1 | 1 | Dozer | 1 | 1 | | | |
| | | | | | | | | | Cranes | 2 | 2 | | | |
| | | | | | | | | | RTVs | 2 | 2 | | | |
| | | | | | | | | | LARCV | 2 | 2 | | | |
| | | OPDS | | OUBs | | | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | | LARCV | 2 | 2 | | | |
| | ABLTS | | Barge Ferry | | | 1 | 1 | | | | | | | |
| | | | Warping Tug | | | 1 | 1 | | | | | | | |
| | IPDS | | OUBs | | | 1 | 1 | HMMWVs | 1 | 1 | | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | | |
| | | | | | | | | Dozer | 2 | 2 | | | | |
| | | | | | | | | Comm Van | 1 | 1 | | | | |
| | | | | | | | | RTV forklift | 1 | 1 | | | | |
| | | | | | | | | LARCV | 2 | 2 | | | | |

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year |
|----------|-------------------------------------|--------------------|----------------|------------------|---------------------|---------------------------|------------------|--------------------|----------------------------|-------------------|--------------|----------------------------|-------------------|
| | Tactical Craft | | | | LCU | 1 | 1 | | | | | | |
| | Littoral Activities | | | | | | | | | | | | |
| | Security Boats | | | | MPF Utility Boat | 2 | 2 | | | | | | |
| | Beach Activities | | | | | | | HMMWVs | 5 | | UAV | 2 | 2 |
| | | | | | | | | 5-ton truck | 20 | | | | |
| | | | | | | | | Dozer | 3 | | | | |
| | | | | | | | | LARCV | 2 | | | | |
| | | | | | | | | AAVs | 10 | | | | |
| | | | | | | | | Fuel Truck | 1 | | | | |
| | Upland Activities | | | | | | | HMMWVs | 47 | 47 | | | |
| | | | | | | | | 4WD Pickups | 18 | 18 | | | |
| | | | | | | | | Fuel Truck | 3 | 3 | | | |
| | | | | | | | | Generators/various | 15 | 15 | | | |
| | | | | | | | | Light Units | 6 | 6 | | | |
| | | | | | | | | Bus | 5 | 5 | | | |
| | | | | | | | | Van | 5 | 5 | | | |
| | Air Activities | | | | | | | | | | CH-53E/MV-22 | 1 | 1 |
| | | | | | | | | | | | CH-46E/MV-22 | 1 | 1 |
| 3 | JLOTS | | | | | | | | | | | | |
| | Offshore Activities | | | | | | | | | | | | |
| | MPF Ships | | | | MPF Utility Boat | 3 | 3 | | | | | | |
| | UB | | | | OUBs | 3 | 3 | | | | | | |
| | LCU 1600/2000 | | | | LCU | 4 | 4 | | | | | | |
| | INLS Causeway "Ferries | | | | Barge Ferry | 4 | 4 | | | | | | |
| | INLS Warping Tugs | | | | Warping Tug | 4 | 4 | | | | | | |
| | MCS | | | | LCU | 2 | 2 | | | | | | |
| | LSV | | | | LCU | 1 | 1 | | | | | | |
| | LCM 8s | | | | LCM-8 | 1 | 1 | | | | | | |
| | Roll-on/Roll-off Discharge Facility | | | | LCM-8 | 4 | 4 | | | | | | |
| | | | | | WTs | 2 | 2 | HMMWVs/Jeeps | 3 | 3 | None | 0 | 0 |
| | | | | | Personal Watercraft | 2 | 2 | 6-ton truck | 1 | 1 | | | |
| | | | | | | | | Dozer | 1 | 1 | | | |
| | | | | | | | | Cranes | 2 | 2 | | | |
| | | | | | | | | RTVs | 2 | 2 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |
| | Tugs | | | | Warping Tug | 2 | 2 | | | | | | |
| | OPDS | | | | OUBs | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |
| | ABLTS | | | | Barge Ferry | 1 | 1 | | | | | | |
| | IPDS | | | | Warping Tug | 1 | 1 | | | | | | |
| | | | | | OUBs | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Dozer | 2 | 2 | | | |
| | | | | | | | | Comm Van | 1 | 1 | | | |
| | | | | | | | | RTV forklift | 1 | 1 | | | |
| | | | | | | | | LARCV | 2 | 2 | | | |

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year |
|---------------------|----------------------------------|--------------------|----------------|------------------|---------------------|---------------------------|------------------|------------------------|----------------------------|-------------------|--------------|----------------------------|-------------------|
| | Tactical Craft | | | | LCU | 3 | 3 | | | | | | |
| | Littoral Activities | | | | | | | | | | | | |
| | Elevated Causeway System (ELCAS) | | | | WTs | 1 | 1 | HMMWVs | 2 | 2 | None | 0 | 0 |
| | | | | | Personal Watercraft | 1 | 1 | 5-ton truck | 2 | 2 | | | |
| | | | | | LCM | 1 | 1 | Light Trucks | 2 | 2 | | | |
| | | | | | | | | Dozers | 1 | 1 | | | |
| | | | | | | | | Forklifts | 1 | 1 | | | |
| | | | | | | | | 75-Ton Crane | 1 | 1 | | | |
| | | | | | | | | Pile Driver | 1 | 1 | | | |
| | | | | | | | | ambulance | 1 | 1 | | | |
| | | | | | | | | water buffalo | 1 | 1 | | | |
| | | | | | | | | 140-ton crane | 1 | 1 | | | |
| | | | | | | | | 30-ton crane | 1 | 1 | | | |
| | | | | | | | | LARCV | 1 | 1 | | | |
| | | | | | | | | Air compressors | 1 | 1 | | | |
| | | | | | | | | Pile Extractor | 1 | 1 | | | |
| | TRIDENT Pier | | | | WTs | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Van | 1 | 1 | | | |
| | | | | | | | | Rough Terrain Forklift | 1 | 1 | | | |
| | | | | | | | | Dozers | 1 | 1 | | | |
| | | | | | | | | LARCV | 1 | 1 | | | |
| | Floating Causeway | | | | Barge Ferry | 1 | 1 | HMMWVs | 1 | 1 | | | |
| | | | | | | | | 5-ton truck | 1 | 1 | | | |
| | | | | | | | | Van | 1 | 1 | | | |
| | | | | | | | | Dozer | 1 | 1 | | | |
| | | | | | | | | LARCV | 1 | 1 | | | |
| | Security Boats | | | | MPF Utility Boat | 2 | 2 | | | | | | |
| | | | | | | 2 | 2 | | | | | | |
| | SLWT | | | | WTs | 2 | 2 | | | | | | |
| | Beach Activities | | | | | | | HMMWVs | 10 | | UAV | 11 | 11 |
| | | | | | | | | 5-ton truck | 40 | | | | |
| | | | | | | | | Dozer | 5 | | | | |
| | | | | | | | | LARCV | 4 | | | | |
| | | | | | | | | AAVs | 10 | | | | |
| | | | | | | | | Fuel Truck | 2 | | | | |
| | Upland Activities | | | | | | | HMMWVs | 119 | 119 | | | |
| | | | | | | | | 4WD Pickups | 50 | 50 | | | |
| | | | | | | | | Fuel Truck | 5 | 5 | | | |
| | | | | | | | | Generators/various | 36 | 36 | | | |
| | | | | | | | | Light Units | 17 | 17 | | | |
| | | | | | | | | Bus | 8 | 8 | | | |
| | | | | | | | | Van | 8 | 8 | | | |
| | Air Activities | | | | | | | | | | CH-53E/MV-22 | 2 | 2 |
| | | | | | | | | | | | CH-46E/MV-22 | 2 | 2 |
| 4 Dawn Blitz | Training Activities | | | | | | | | | | | | |
| | MPF Ships | | | | MPF Utility Boat | 3 | 3 | | | | | | |
| | LCU 1600/2000 | | | | LCU | 4 | 4 | | | | | | |
| | INLS Causeway "Ferries | | | | Barge Ferry | 4 | 4 | | | | | | |
| | INLS Warping Tugs | | | | Warping Tug | 4 | 4 | | | | | | |
| | MCS | | | | LCU | 2 | 2 | | | | | | |
| | Beach Activities | | | | CRRCs | 10 | 10 | HMMWVs | 6 | 6 | | | |
| | | | | | LPD | 4 | 4 | 4WD Pickups | 6 | 6 | | | |
| | | | | | LCUs | 4 | 4 | AAVs | 18 | 18 | | | |
| | | | | | LCACs | 4 | 4 | LAVs | 6 | 6 | | | |

| Scenario | Type Training | Reference Days (a) | Operations (b) | No. of Personnel | Ship/Boat Type | Number of vessels assumed | Vessels per year | Ground Vehicles | Number of vehicles assumed | Vehicles per year | Aircraft | Number of aircraft assumed | Aircraft per year |
|----------------|---------------|--------------------|----------------|------------------|----------------|---------------------------|------------------|-----------------|----------------------------|-------------------|--------------|----------------------------|-------------------|
| Air Activities | | | | | | | | IFAVs | 6 | 6 | CH-53E/MV-22 | 2 | 2 |
| | | | | | | | | | | | CH-46E/MV-22 | 2 | 2 |

Aircraft Operations and Description

| Scenario | Type Training | Days (a) | Operations (b) | Aircraft | Number | Aircraft Time on Range (hrs) | Emissions Factors (lb/operation) | | | Emissions (lbs/year) | | | |
|--------------|---------------|----------|----------------|--------------|--------|------------------------------|----------------------------------|-------------|-----------------|----------------------|----------------|-----------------|----------|
| | | | | | | | CO2 | CH4 | N2O | CO2 | CH4 | N2O | CO2e |
| 2 | MPF | 30 | 6 | CH-53E/MV-22 | 1 | 1.0 | 1693 | 0.044183 | 0.050728 | 10158 | 0.265096 | 0.30437 | 10257.92 |
| | | | | CH-46E/MV-22 | 1 | 1.0 | 1693 | 6.93 | 0.01 | 10158 | 41.58 | 0.06 | 11049.78 |
| | | | | Total | | | | | 20316 | 41.8451 | 0.36437 | 21307.7 | |
| 3 | JLOTS | 90 | 3 | UAV | 11 | | | | | | | | |
| | | | | CH-53E/MV-22 | 2 | 1.0 | 1693 | 6.93 | 0.01 | 10158 | 41.58 | 0.06 | 11049.78 |
| | | | | CH-46E/MV-22 | 2 | 1.0 | 1693 | 6.93 | 0.01 | 10158 | 41.58 | 0.06 | 11049.78 |
| Total | | | | | | 20316 | 83.16 | 0.12 | 22099.56 | | | | |
| 4 | Dawn Blitz | 21 | 4 | CH-53E/MV-22 | 2 | 1.0 | 1693 | 6.93 | 0.01 | 13544 | 55.44 | 0.08 | 14733.04 |
| | | | | CH-46E/MV-22 | 2 | 1.0 | 1693 | 6.93 | 0.01 | 13544 | 55.44 | 0.08 | 14733.04 |
| | | | | Total | | | | | 27088 | 110.88 | 0.16 | 29466.08 | |

Assumptions: Assume that MV-22 operations are Special Personnel Insertion and Extraction Rig operations.
 Assume all aircraft will eventually be MV-22s
 Source: AESO Memorandum 9655.
 Assume MV-22s will participate in 12 operations per day during exercise.

(a) Days = the number of days per operation
 (b) Operations = the number of operations per year

Marine Vessel Operations and Description

| Scenario Type Training | Reference Days (a) | Operations (b) | Ship/Boat Type | Number | Ship Time on Range (hrs) (e) | Engines and Generators | | | | Ave. Speed (Knots) | Power Level (%) or horsepower | Engines on Line | Generator - Load (kW) | Emissions Factors (lb/hr) (c) | | | Emissions, (lbs/year) | | | | |
|----------------------------------------------------------|-----------------------|----------------|---------------------|--------|---------------------------------|-------------------------------------|------------|-----------------------------------------|-----------|-----------------------|----------------------------------|-----------------|--------------------------|-------------------------------|----------|----------|-----------------------|-----------------|-----------------|-------------------|------|
| | | | | | | Hours | Propulsion | No. | Generator | | | | | No. | CO2 | CH4 | N2O | CO2 | CH4 | N2O | CO2e |
| | | | | | | | | | | | | | | | | | | | | | |
| 1 Field Exercises Offshore Activities Ubs | 14 | 8 | OUBs | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 1877895.91 | 136.9106 | 48.10374 | 1895683 | |
| LCU 1600/2000 | 14 | 8 | LCU | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 1877895.91 | 136.9106 | 48.10374 | 1895683 | |
| INLS Causeway *Ferries | 14 | 8 | Barge Ferry | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 9138683.95 | 666.2686 | 234.0944 | 9225245 | |
| INLS Warping Tugs | 14 | 8 | Warping Tug | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 9138683.95 | 666.2686 | 234.0944 | 9225245 | |
| LCM 8s | 14 | 8 | LCM-8 | 2 | 2 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 938947.953 | 68.45532 | 24.05187 | 947842 | |
| ABLTS | 14 | 8 | Barge Ferry | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 2284670.99 | 166.5671 | 58.52359 | 2306311 | |
| | 14 | 8 | Warping Tug | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 2284670.99 | 166.5671 | 58.52359 | 2306311 | |
| LCACs | 14 | 8 | LCACs | 2 | 2 | Avco Lycoming TF- 40B | 4 | APU T-62-T-40-7 Sunstrand 60 kW each | 2 | 35 | 80% | 4 | 2@ 10kW ea | 10084.68 | 0.735238 | 0.258327 | 322709.777 | 23.52761 | 8.266457 | 325766 | |
| Total | | | | | | | | | | | | | | | | | 27864159.4 | 2031.476 | 713.7617 | 28128087 | |
| 2 MPF | | | | | | | | | | | | | | | | | | | | | |
| MPF Ships | 30 | 0.5 | MPF Utility Boat | 1 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 1503.556 | 0.109619 | 0.038515 | 90213.3612 | 6.577132 | 2.310884 | 91068 | |
| UB | 30 | 0.5 | OUBs | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 251503.916 | 18.33625 | 6.442465 | 253886 | |
| LCU 1600/2000 | 30 | 0.5 | LCU | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 251503.916 | 18.33625 | 6.442465 | 253886 | |
| INLS Causeway *Ferries | 30 | 0.5 | Barge Ferry | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 1223930.89 | 89.2324 | 31.35192 | 1235524 | |
| INLS Warping Tugs | 30 | 0.5 | Warping Tug | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 1223930.89 | 89.2324 | 31.35192 | 1235524 | |
| LCM 8s | 30 | 0.5 | LCM-8 | 2 | 2 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 125751.958 | 9.168123 | 3.221232 | 126943 | |
| Roll-on/Roll-off Discharge Facility | 30 | 0.5 | WTs | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 305982.722 | 22.3081 | 7.837981 | 308881 | |
| | 30 | 0.5 | Personal Watercraft | 1 | 4 | Yamaha Outboard, 160 hp (d) | 1 | None | 0 | 2 | 100% | 1 | NA | 182.2492 | 0.013287 | 0.004668 | 10934.9529 | 0.797228 | 0.280107 | 11039 | |
| OPDS | 15 | 0.5 | OUBs | 1 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 62875.979 | 4.584062 | 1.610616 | 63472 | |
| ABLTS | 15 | 0.5 | Barge Ferry | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 152991.361 | 11.15405 | 3.918991 | 154440 | |
| | 15 | 0.5 | Warping Tug | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 152991.361 | 11.15405 | 3.918991 | 154440 | |
| IPDS | 15 | 0.5 | OUBs | 1 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 62875.979 | 4.584062 | 1.610616 | 63472 | |
| Tactical Craft | 30 | 0.5 | LCU | 1 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 125751.958 | 9.168123 | 3.221232 | 126943 | |
| Littoral Activities Security Boats Total | 30 | 0.5 | MPF Utility Boat | 2 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 1503.556 | 0.109619 | 0.038515 | 180426.722 | 13.15426 | 4.621768 | 182136 | |
| | | | | | | | | | | | | | | | | | 4221665.96 | 307.7865 | 108.1412 | 4261653.25 | |
| 3 JLOTS | | | | | | | | | | | | | | | | | | | | | |
| Offshore Activities | | | | | | | | | | | | | | | | | | | | | |
| MPF Ships | 49 | 0.25 | MPF Utility Boat | 3 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 1503.556 | 0.109619 | 0.038515 | 221022.735 | 16.11397 | 5.661666 | 223116 | |
| UB | 49 | 0.25 | OUBs | 3 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 308092.297 | 22.4619 | 7.892019 | 311011 | |
| LCU 1600/2000 | 49 | 0.25 | LCU | 4 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 410789.73 | 29.9492 | 10.52269 | 414681 | |
| INLS Causeway *Ferries | 49 | 0.25 | Barge Ferry | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 999543.557 | 72.87313 | 25.60407 | 1009011 | |
| INLS Warping Tugs | 49 | 0.25 | Warping Tug | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 999543.557 | 72.87313 | 25.60407 | 1009011 | |
| MCS | 49 | 0.25 | LCU | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 205394.865 | 14.9746 | 5.261346 | 207340 | |
| LSV | 49 | 0.25 | LCU | 1 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 102697.432 | 7.4873 | 2.630673 | 103670 | |
| | 49 | 0.25 | LCM-8 | 1 | 2 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 51348.7162 | 3.74365 | 1.315337 | 51835 | |

| Scenario Type Training | Reference Days (a) | Operations (b) | Ship/Boat Type | Number | Engines and Generators | | | | Ave. Speed (Knots) | Power Level (%) or horsepower | Engines on Line | Generator - Load (kW) | Emissions Factors (lb/hr) (c) | | | Emissions, (lbs/year) | | | | |
|---------------------------------------------------------------------------|-----------------------|----------------|---------------------|--------|---------------------------------|-------------------------------------------|-----|-----------------------------------------|-----------------------|----------------------------------|-------------------|--------------------------|-------------------------------|----------|----------|-----------------------|-------------------|-----------------|-----------------|-------------------|
| | | | | | Ship Time on Range (hrs) (e) | Propulsion | | Generator | | | | | CO2 | CH4 | N2O | CO2 | CH4 | N2O | CO2e | |
| | | | | | | Hours | No. | No. | | | | | | | | | | | | No. |
| LCM 8s | 49 | 0.25 | LCM-8 | 4 | 2 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 205394.865 | 14.9746 | 5.261346 | 207340 |
| Roll-on/Roll-off Discharge Facility | 49 | 0.25 | WTs | 2 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 499771.778 | 36.43656 | 12.80204 | 504506 |
| | 49 | 0.25 | Personal Watercraft | 2 | 4 | Yamaha Outboard, 160 hp (d) | 1 | None | 0 | 2 | 100% | 1 | NA | 26.13109 | 2.500937 | 14.9774 | 2560.84658 | 245.0918 | 1467.785 | 462721 |
| Tugs | 49 | 0.25 | Warping Tug | 2 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 499771.778 | 36.43656 | 12.80204 | 504506 |
| OPDS | 15 | 0.25 | OUBs | 1 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 31437.9895 | 2.292031 | 0.805308 | 31736 |
| ABLTS | 15 | 0.25 | Barge Ferry | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 76495.6804 | 5.577025 | 1.959495 | 77220 |
| | 15 | 0.25 | Warping Tug | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 76495.6804 | 5.577025 | 1.959495 | 77220 |
| IPDS | 15 | 0.25 | OUBs | 1 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 31437.9895 | 2.292031 | 0.805308 | 31736 |
| Tactical Craft | 49 | 0.25 | LCU | 3 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 308092.297 | 22.4619 | 7.892019 | 311011 |
| Littoral Activities Elevated Causeway System (ELCAS) | 32 | 0.25 | WTs | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 163190.785 | 11.89765 | 4.180257 | 164737 |
| | 32 | 0.25 | Personal Watercraft | 1 | 4 | Yamaha Outboard, 160 hp (d) | 1 | None | 0 | 2 | 100% | 1 | NA | 1503.556 | 0.109619 | 0.038515 | 48113.7926 | 3.507804 | 1.232472 | 48570 |
| | 32 | 0.25 | LCM | 1 | 2 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 33533.8555 | 2.444833 | 0.858995 | 33851 |
| TRIDENT Pier | 32 | 0.25 | WTs | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 163190.785 | 11.89765 | 4.180257 | 164737 |
| Floating Causeway | 32 | 0.25 | Barge Ferry | 1 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 163190.785 | 11.89765 | 4.180257 | 164737 |
| Security Boats SLWT | 32 | 0.25 | MPF Utility Boat | 2 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 1503.556 | 0.109619 | 0.038515 | 96227.5853 | 7.015607 | 2.464943 | 97139 |
| | 32 | 0.25 | WTs | 2 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 326381.57 | 23.79531 | 8.360513 | 329473 |
| Total | | | | | | | | | | | | | | | | | 6023720.95 | 684.073 | 1622.022 | 6540913.32 |
| 4 Dawn Blitz Training Activities MPF Ships LCU 1600/2000 | 21 | 4 | MPF Utility Boat | 3 | 4 | Diesel Engines | 2 | None | 0 | 2 | 660 | 2 | NA | 1503.556 | 0.109619 | 0.038515 | 1515584.47 | 110.4958 | 38.82285 | 1529940 |
| | 21 | 4 | LCU | 4 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 2816843.86 | 205.366 | 72.15561 | 2843525 |
| | 21 | 4 | Barge Ferry | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 6854012.96 | 499.7014 | 175.5708 | 6918934 |
| | 21 | 4 | Warping Tugs | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 6854012.96 | 499.7014 | 175.5708 | 6918934 |
| | 21 | 4 | LCU | 2 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 1408421.93 | 102.683 | 36.0778 | 1421762 |
| | 21 | 4 | CRRCs | 10 | 4 | OMC Outboard, 55 hp (d) | 1 | None | 0 | 2 | 600-800 | 1 | NA | 62.64817 | 0.0 | 0.0 | 210497.843 | 15.34664 | 5.392063 | 212492 |
| | 21 | 4 | LPD | 4 | 4 | Foster Wheeler/ Babcock & Wilcox | 2 | NA - No separate emissions | 0 | 7 | 25% | 2 | NA | 5099.71 | 0.37 | 0.13 | 6854012.96 | 499.7014 | 175.5708 | 6918934 |
| | 21 | 4 | LCUs | 4 | 4 | GM Detroit, V12-71N 460bhp | 2 | 3-71 GM Detroit, 40 kW | 2 | 10 | 2000 rpm (97%) | 2 | 2@ 7kW ea | 2095.866 | 0.152802 | 0.053687 | 2816843.86 | 205.366 | 72.15561 | 2843525 |
| | 21 | 4 | LCACs | 4 | 4 | Avco Lycoming TF- 40B 3,955 hp each | 4 | APU T-62-T-40-7 Sunstrand 60 kW each | 2 | 35 | 80% | 4 | 2@ 10kW ea | 10084.68 | 0.735238 | 0.258327 | 13553810.6 | 988.1596 | 347.1912 | 13682191 |
| Total | | | | | | | | | | | | | | | | | 42884041.5 | 3126.521 | 1098.507 | 43290235.7 |

Ground Vehicle Operations and Description

| Scenario | Type Training | Days (a) | Operations (b) | Ground Vehicles | Number | Engine Load | Hours per day | Horsepower | Emissions Factors (lb/hr) | | | Emissions (lbs) | | |
|--------------------------|-------------------|-------------------------------------------------------------------|----------------|--------------------|--------------|-------------|---------------|------------|---------------------------|------|------|-------------------|--------------|----------------|
| | | | | | | | | | CO2 | CH4 | N2O | CO2 | CH4 | N2O |
| 1 Field Exercises | Beach Activities | 14 | 8 | HMMWVs | 2 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 547.26 | 0.06 | 0.00 |
| | | 14 | 8 | Dozer | 1 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 158959.12 | 17.62 | 0.00 |
| | | 14 | 8 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 98226.86 | 10.89 | 0.00 |
| | Upland Activities | 14 | 8 | HMMWVs | 25 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 6840.80 | 0.76 | 0.00 |
| | | 14 | 8 | 4WD Pickups | 14 | | 2 | | 22.71 | 0.00 | 0.00 | 71227.97 | 5.91 | 5.03 |
| | | 14 | 8 | Fuel Truck | 1 | | 2 | | 22.71 | 0.00 | 0.00 | 5087.71 | 0.42 | 0.36 |
| | | 14 | 8 | Generators/various | 10 | 30% | 24 | Various | 2064.95 | 0.00 | 5.28 | 1665175.68 | 0.00 | 4257.79 |
| | | 14 | 8 | Light Units | 6 | | 2 | | 22.71 | 0.00 | 0.00 | 30526.27 | 2.53 | 2.16 |
| | | 14 | 8 | Bus | 2 | | 2 | | 89.15 | 0.00 | 0.07 | 39940.70 | 0.86 | 31.52 |
| | Total | | | | | | | | | | | 2137584.92 | 44.12 | 4301.18 |
| | 2 MPF | Offshore Activities Roll-on/Roll-off Discharge Facility | 30 | 0.5 | HMMWVs/Jeeps | 3 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 109.94 | 0.01 |
| 30 | | | 0.5 | 6-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 578.47 | 0.02 | 0.34 |
| 30 | | | 0.5 | Dozer | 1 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 21289.17 | 2.36 | 0.00 |
| 30 | | | 0.5 | Cranes | 2 | 43% | 8 | 94.0 | 1.25 | 0.00 | 0.00 | 12154.07 | 1.35 | 0.00 |
| 30 | | | 0.5 | RTVs | 2 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 13283.18 | 1.47 | 0.00 |
| 30 | | | 0.5 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 13155.38 | 1.46 | 0.00 |
| OPDS | | | 15 | 0.5 | HMMWVs | 1 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 18.32 | 0.00 |
| | | 15 | 0.5 | 5-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 289.24 | 0.01 | 0.17 |
| | | 15 | 0.5 | Dozer | 2 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 21289.17 | 2.36 | 0.00 |
| | | 15 | 0.5 | Comm Van | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 1362.78 | 0.11 | 0.10 |
| | | 15 | 0.5 | RTV forklift | 1 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 3320.79 | 0.37 | 0.00 |
| | | 15 | 0.5 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 6577.69 | 0.73 | 0.00 |
| IPDS | | 15 | 0.5 | HMMWVs | 1 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 18.32 | 0.00 | 0.00 |
| | | 15 | 0.5 | 5-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 289.24 | 0.01 | 0.17 |
| | | 15 | 0.5 | Dozer | 2 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 21289.17 | 2.36 | 0.00 |
| | | 15 | 0.5 | Comm Van | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 1362.78 | 0.11 | 0.10 |
| | | 15 | 0.5 | RTV forklift | 1 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 3320.79 | 0.37 | 0.00 |
| | | 15 | 0.5 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 6577.69 | 0.73 | 0.00 |
| Beach Activities | | 30 | 0.5 | HMMWVs | 5 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 183.24 | 0.02 | 0.00 |
| | | 30 | 0.5 | 5-ton truck | 20 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 11569.41 | 0.31 | 6.79 |
| | | 30 | 0.5 | Dozer | 3 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 63867.50 | 7.08 | 0.00 |
| | | 30 | 0.5 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 13155.38 | 1.46 | 0.00 |
| | | 30 | 0.5 | AAVs | 10 | | 2 | | 0.444918 | 1.0 | 0.2 | 133.48 | 310.82 | 52.23 |
| | | 30 | 0.5 | Fuel Truck | 1 | | 2 | | 22.71 | 0.00 | 0.00 | 681.39 | 0.06 | 0.05 |

Table GHG/NAA-4
Ground Vehicles Emissions
No Action Alternative

| Scenario | Type Training | Days (a) | Operations (b) | Ground Vehicles | Number | Engine Load | Hours per day | Horsepower | Emissions Factors (lb/hr) | | | Emissions (lbs) | | |
|----------------------------|-------------------------------------|----------|----------------|-----------------|--------|-------------|---------------|------------|---------------------------|------|------------------|-----------------|---------------|--------|
| | | | | | | | | | CO2 | CH4 | N2O | CO2 | CH4 | N2O |
| | | | | | | | | | | | | | | |
| Upland Activities | | | | | | | | | | | | | | |
| | | 30 | 0.5 | HMMWVs | 47 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 1722.42 | 0.19 | 0.00 |
| | | 30 | 0.5 | 4WD Pickups | 18 | | 2 | | 22.71 | 0.00 | 0.00 | 12265.02 | 1.02 | 0.87 |
| | | 30 | 0.5 | Fuel Truck | 3 | | 2 | | 22.71 | 0.00 | 0.00 | 2044.17 | 0.17 | 0.14 |
| | | 30 | 0.5 | Generators/vari | 15 | 30% | 24 | Various | 2064.95 | 0.00 | 5.28 | 223014.60 | 0.00 | 570.24 |
| | | 30 | 0.5 | Light Units | 6 | | 2 | | 22.71 | 0.00 | 0.00 | 4088.34 | 0.34 | 0.29 |
| | | 30 | 0.5 | Bus | 5 | | 2 | | 89.15 | 0.00 | 0.07 | 13373.00 | 0.29 | 10.55 |
| | | 30 | 0.5 | Van | 5 | | 8 | | 22.71 | 0.00 | 0.00 | 13627.80 | 1.13 | 0.96 |
| | | | | | | | | | | | 486011.94 | 336.71 | 642.99 | |
| 3 JLOTS | | | | | | | | | | | | | | |
| Offshore Activities | | | | | | | | | | | | | | |
| | Roll-on/Roll-off Discharge Facility | 49 | 0.25 | HMMWVs/Jeeps | 3 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 89.79 | 0.01 | 0.00 |
| | | 49 | 0.25 | 6-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 472.42 | 0.01 | 0.28 |
| | | 49 | 0.25 | Dozer | 1 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 17386.15 | 1.93 | 0.00 |
| | | 49 | 0.25 | Cranes | 2 | 43% | 8 | 94.0 | 1.25 | 0.00 | 0.00 | 9925.82 | 1.10 | 0.00 |
| | | 49 | 0.25 | RTVs | 2 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 10847.93 | 1.20 | 0.00 |
| | | 49 | 0.25 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 10743.56 | 1.19 | 0.00 |
| OPDS | | | | | | | | | | | | | | |
| | | 15 | 0.25 | HMMWVs | 1 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 9.16 | 0.00 | 0.00 |
| | | 15 | 0.25 | 5-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 144.62 | 0.00 | 0.08 |
| | | 15 | 0.25 | Dozer | 2 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 10644.58 | 1.18 | 0.00 |
| | | 15 | 0.25 | Comm Van | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 681.39 | 0.06 | 0.05 |
| | | 15 | 0.25 | RTV forklift | 1 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 1660.40 | 0.18 | 0.00 |
| | | 15 | 0.25 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 3288.85 | 0.36 | 0.00 |
| IPDS | | | | | | | | | | | | | | |
| | | 15 | 0.25 | HMMWVs | 1 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 9.16 | 0.00 | 0.00 |
| | | 15 | 0.25 | 5-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 144.62 | 0.00 | 0.08 |
| | | 15 | 0.25 | Dozer | 2 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 10644.58 | 1.18 | 0.00 |
| | | 15 | 0.25 | Comm Van | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 681.39 | 0.06 | 0.05 |
| | | 15 | 0.25 | RTV forklift | 1 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 1660.40 | 0.18 | 0.00 |
| | | 15 | 0.25 | LARCV | 2 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 3288.85 | 0.36 | 0.00 |
| Littoral Activities | | | | | | | | | | | | | | |
| | Elevated Causeway System (ELCAS) | 32 | 0.25 | HMMWVs | 2 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 39.09 | 0.00 | 0.00 |
| | | 32 | 0.25 | 5-ton truck | 2 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 617.03 | 0.02 | 0.36 |
| | | 32 | 0.25 | Light Trucks | 2 | | 2 | | 1.25 | 0.00 | 0.00 | 40.09 | 0.00 | 0.00 |
| | | 32 | 0.25 | Dozers | 1 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 11354.22 | 1.26 | 0.00 |
| | | 32 | 0.25 | Forklifts | 1 | 48% | 8 | 37.0 | 1.25 | 0.00 | 0.00 | 1424.09 | 0.16 | 0.00 |
| | | 32 | 0.25 | 75-Ton Crane | 1 | 74% | 8 | 194.0 | 1.25 | 0.00 | 0.00 | 11511.39 | 1.28 | 0.00 |
| | | 32 | 0.25 | Pile Driver | 1 | 30% | 24 | 20.0 | 1.25 | 0.00 | 0.00 | 1443.33 | 0.16 | 0.00 |
| | | 32 | 0.25 | ambulance | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 1453.63 | 0.12 | 0.10 |
| | | 32 | 0.25 | water buffalo | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 308.52 | 0.01 | 0.18 |
| | | 32 | 0.25 | 140-ton crane | 1 | 74% | 8 | 399.0 | 1.25 | 0.00 | 0.00 | 23675.48 | 2.62 | 0.00 |
| | | 32 | 0.25 | 30-ton crane | 1 | 74% | 8 | 194.0 | 1.25 | 0.00 | 0.00 | 11511.39 | 1.28 | 0.00 |
| | | 32 | 0.25 | LARCV | 1 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 3508.10 | 0.39 | 0.00 |
| | | 32 | 0.25 | Air compressors | 1 | 48% | 8 | 106.0 | 1.25 | 0.00 | 0.00 | 4079.82 | 0.45 | 0.00 |
| | | 32 | 0.25 | Pile Extractor | 1 | 30% | 24 | 20.0 | 1.25 | 0.00 | 0.00 | 1443.33 | 0.16 | 0.00 |

Table GHG/NAA-4
Ground Vehicles Emissions
No Action Alternative

| Scenario | Type Training | Days (a) | Operations (b) | Ground Vehicles | Number | Engine Load | Hours per day | Horsepower | Emissions Factors (lb/hr) | | | Emissions (lbs) | | |
|----------------------------------|---------------|----------|----------------|------------------|--------|-------------|---------------|------------|---------------------------|------|------------------|------------------|---------------|--------------|
| | | | | | | | | | CO2 | CH4 | N2O | CO2 | CH4 | N2O |
| | | | | | | | | | | | | | | |
| TRIDENT Pier | | 32 | 0.25 | HMMWVs | 1 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 19.55 | 0.00 | 0.00 |
| | | 32 | 0.25 | 5-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 308.52 | 0.01 | 0.18 |
| | | 32 | 0.25 | Van | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 1453.63 | 0.12 | 0.10 |
| | | 32 | 0.25 | Rough Terrain F | 1 | 48% | 8 | 93.0 | 1.25 | 0.00 | 0.00 | 3542.18 | 0.39 | 0.00 |
| | | 32 | 0.25 | Dozers | 1 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 11354.22 | 1.26 | 0.00 |
| | | 32 | 0.25 | LARCV | 1 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 3508.10 | 0.39 | 0.00 |
| Floating Causeway | | 32 | 0.25 | HMMWVs | 1 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 19.55 | 0.00 | 0.00 |
| | | 32 | 0.25 | 5-ton truck | 1 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 308.52 | 0.01 | 0.18 |
| | | 32 | 0.25 | Van | 1 | | 8 | | 22.71 | 0.00 | 0.00 | 1453.63 | 0.12 | 0.10 |
| | | 32 | 0.25 | Dozer | 1 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 11354.22 | 1.26 | 0.00 |
| | | 32 | 0.25 | LARCV | 1 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 3508.10 | 0.39 | 0.00 |
| Beach Activities | | 90 | 0.25 | HMMWVs | 10 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 549.71 | 0.06 | 0.00 |
| | | 90 | 0.25 | 5-ton truck | 40 | 80% | 1 | | 48.21 | 0.00 | 0.03 | 34708.22 | 0.93 | 20.37 |
| | | 90 | 0.25 | Dozer | 5 | 59% | 8 | 240.0 | 1.25 | 0.00 | 0.00 | 159668.76 | 17.70 | 0.00 |
| | | 90 | 0.25 | LARCV | 4 | 50% | 2 | 350.0 | 1.25 | 0.00 | 0.00 | 39466.15 | 4.38 | 0.00 |
| | | 90 | 0.25 | AAVs | 10 | | 2 | | 0.444918 | 1.0 | 0.2 | 200.21 | 466.23 | 78.34 |
| | | 90 | 0.25 | Fuel Truck | 2 | | 2 | | 22.71 | 0.00 | 0.00 | 2044.17 | 0.17 | 0.14 |
| Upland Activities | | 90 | 0.25 | HMMWVs | 119 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 6541.51 | 0.73 | 0.00 |
| | | 90 | 0.25 | 4WD Pickups | 50 | | 2 | | 22.71 | 0.00 | 0.00 | 51104.25 | 4.24 | 3.61 |
| | | 90 | 0.25 | Fuel Truck | 5 | | 2 | | 22.71 | 0.00 | 0.00 | 5110.43 | 0.42 | 0.36 |
| | | 90 | 0.25 | Generators/vario | 36 | 30% | 24 | Various | 2064.95 | 0.00 | 5.28 | 334521.90 | 0.00 | 855.36 |
| | | 90 | 0.25 | Light Units | 17 | | 2 | | 22.71 | 0.00 | 0.00 | 17375.45 | 1.44 | 1.23 |
| | | 90 | 0.25 | Bus | 8 | | 2 | | 89.15 | 0.00 | 0.07 | 32095.21 | 0.69 | 25.33 |
| | | 90 | 0.25 | Van | 8 | | 8 | | 22.71 | 0.00 | 0.00 | 32706.72 | 2.71 | 2.31 |
| | | | | | | | | | | | 907656.08 | 520.59 | 988.81 | |
| 4 Dawn Blitz Training Activities | | 21 | 4 | HMMWVs | 6 | 65% | 3 | | 1.25 | 0.00 | 0.00 | 1231.34 | 0.14 | 0.00 |
| | | 21 | 4 | 4WD Pickups | 6 | | 2 | | 22.71 | 0.00 | 0.00 | 22894.70 | 1.90 | 1.62 |
| | | 21 | 4 | AAVs | 18 | | 2 | | 180.277 | 0.0 | 0.0 | 545157.56 | 39.75 | 13.96 |
| | | 21 | 4 | LAVs | 6 | 65% | 2 | | 1.25 | 0.00 | 0.00 | 820.90 | 0.09 | 0.00 |
| | | 21 | 4 | IFAVs | 6 | 65% | 2 | | 1.25 | 0.00 | 0.00 | 820.90 | 0.09 | 0.00 |
| | | | | | | | | | | | | 570925.40 | 41.96 | 15.58 |

Table GHG/NAA-4
 Ground Vehicles Emissions
 No Action Alternative

| Scenario | Type Training | Days (a) | Operations (b) | Ground Vehicles | Number | Engine Load | Hours per day | Horsepower | Emissions Factors (lb/hr) | | | Emissions (lbs) | | |
|----------|---------------|----------|----------------|-----------------|--------|-------------|---------------|------------|---------------------------|-----|-----|-----------------|-----|-----|
| | | | | | | | | | CO2 | CH4 | N2O | CO2 | CH4 | N2O |
| | | | | | | | | | | | | | | |

Assumptions: Fuel truck is equivalent to 4WD vehicle; large trucks modeled as MDTs. Busses assumed to be diesel powered
 Emission factors from ARB's OFFROAD 2007 Model

| Activity | Annual Activity Emissions, metric tons/year | | | |
|-------------------------|---------------------------------------------|-------------|-------------|------------------|
| | CO2 | CH4 | N2O | CO2e |
| Field Exercises | | | | |
| Marine Vessels | 12,639.10 | 0.92 | 0.32 | 12,758.82 |
| Ground Vehicles | 969.60 | 0.02 | 1.95 | 1,574.83 |
| Total, tons/year | 13,608.70 | 0.94 | 2.27 | 14,333.65 |
| MPF | | | | |
| Marine Vessels | 1,914.94 | 0.14 | 0.05 | 1,933.07 |
| Ground Vehicles | 220.45 | 0.15 | 0.29 | 314.08 |
| Aircraft | 9.22 | 0.02 | 0.00 | 9.67 |
| Total, tons/year | 2,144.60 | 0.31 | 0.34 | 2,256.81 |
| JLOTS | | | | |
| Marine Vessels | 2,732.34 | 0.31 | 0.74 | 2,966.94 |
| Ground Vehicles | 411.71 | 0.24 | 0.45 | 555.71 |
| Aircraft | 9.22 | 0.04 | 0.00 | 10.02 |
| Total, tons/year | 3,153.27 | 0.58 | 1.18 | 3,532.67 |
| Dawn Blitz | | | | |
| Marine Vessels | 19,452.07 | 1.42 | 0.50 | 19,636.32 |
| Ground Vehicles | 258.97 | 0.02 | 0.01 | 261.56 |
| Aircraft | 12.29 | 0.05 | 0.00 | 13.37 |
| Total, tons/year | 19,723.33 | 1.49 | 0.51 | 19,911.25 |
| Grand Total | 38,629.90 | 3.32 | 4.31 | 40,034.39 |

Assumptions: Field exercises - 8 per year, 14 days per exercise
 MPF - 1 exercise every other year (0.5 exercise every year), 30 days per exercise
 JLOTS - 1 exercise every 4 years (0.25 exercise every year), 90 days per exercise
 Dawn Blitz - 4 exercises per year, 21 days per exercise