

Final

**Supplemental Environmental Assessment
Operations Access Points (P-159A Green Beach)**



Marine Corps Base Camp Pendleton, California

October 2011

Acronyms and Abbreviations

AC/S ES	Assistant Chief of Staff – Environmental Security	mg/L	milligrams per liter
APE	Area of Potential Effects	mg/m ³	milligrams per cubic meter
BMP	best management practice(s)	µg/m ³	micrograms per cubic meter
BNSF	Burlington Northern Santa Fe Railway	MBTA	Migratory Bird Treaty Act
BO	Biological Opinion	MCB	Marine Corps Base
CAA	Clean Air Act	NAAQS	National Ambient Air Quality Standards
CAAQS	California Ambient Air Quality Standards	NAVFAC SW	Naval Facilities Engineering Command Southwest
CAGN	California gnatcatcher (coastal)	NCTD	North County Transit District
CARB	California Air Resources Board	NEPA	National Environmental Policy Act
CASHPO	California State Historic Preservation Office	NHPA	National Historic Preservation Act
CCC	California Coastal Commission	NO ₂	nitrogen dioxide
CCND	Coastal Consistency Negative Determination	NO _x	nitrogen oxides
CEQ	Council on Environmental Quality	N ₂ O	nitrous oxide
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	NRHP	National Register of Historic Places
CFR	Code of Federal Regulations	NWP	Nationwide Permit
CIDH	Cast-in-drilled-hole	O ₃	ozone
CO	carbon monoxide	PCH	Pacific Coast Highway
CO ₂	carbon dioxide	PSD	Prevention of Significant Deterioration
CO _{2e}	carbon dioxide equivalent	PM ₁₀	particulate matter less than 10 microns in diameter
CH ₄	methane	PM _{2.5}	particulate matter less than 2.5 microns in diameter
CMP	Conceptual Mitigation Plan	ppm	parts per million
CSS	coastal sage scrub	PPV	Public-Private Venture
CWA	Clean Water Act	RAQS	Regional Air Quality Strategy
CZMA	Coastal Zone Management Act	RCRA	Resource Conservation Recovery Act
D	Disturbed/Ruderal	ROI	Region of Influence
DOD	Department of Defense	RONA	Record of Non-Applicability
DON	Department of the Navy	RWQCB	Regional Water Quality Control Board
DV	Developed	SANDAG	San Diego Association of Governments
EA	Environmental Assessment	SCM	Special Conservation Measures
EIS	Environmental Impact Statement	SCRRA	Southern California Regional Rail Authority
EO	Executive Order	SDAB	San Diego Air Basin
ESA	Endangered Species Act	SDCAPCD	San Diego County Air Pollution Control District
ft	foot (feet)	SEA	Supplemental Environmental Assessment
FONSI	Finding of No Significant Impact	SIP	State Implementation Plan
FY	fiscal year	SO ₂	sulfur dioxide
GHG	greenhouse gases	SO _x	sulfur oxides
GIS	geographic information sciences	SONGS	San Onofre Nuclear Generating Station
GWP	global warming potential	SWPPP	Stormwater Pollution Prevention Plan
I-5/I-15	Interstate-5/Interstate-15	SWFL	southwestern willow flycatcher
INRMP	Integrated Natural Resource Management Plan	SWS	southwestern willow scrub
IR	Installation Restoration	TWG	tidewater goby
km	kilometer(s)	U.S.	United States
LBVI	least Bell's vireo	USACE	U.S. Army Corps of Engineers
LFCR	light-footed clapper rail	U.S.C.	U.S. Code
LOSSAN	Los Angeles-San Diego-San Luis Obispo Rail Corridor (Pacific Surfliner)	USDA	U.S. Department of Agriculture
m	meter(s)	USEPA	U.S. Environmental Protection Agency
m ³	cubic meter(s)	USFWS	U.S. Fish and Wildlife Service
		USMC	U.S. Marine Corps
		VOC	volatile organic compound(s)



UNITED STATES MARINE CORPS
MARINE CORPS BASE
BOX 555010
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENVSEC
AUG 31 2011

MEMORANDUM FOR THE RECORD

From: Commanding Officer
To: Assistant Chief of Staff, Environmental Security
Subj: FINDING OF NO SIGNIFICANT IMPACT FOR NEPA 20020013A;
GREEN BEACH OPERATIONS ACCESS POINTS (P-159A), CAMP
PENDLETON
Ref: (a) National Environmental Policy Act of 1969 (42 U.S.C.
§§ 4321-4370h)
(b) Council on Environmental Quality NEPA Regulations (40
C.F.R. Parts 1500-1508)
(c) Environmental Assessment for Green Beach Operations
Access Points (P-159A), January 2010
(d) Supplemental Environmental Assessment for Green Beach
Operations Access Points (P-159A), July 2011

1. References (a) and (b), the United States Marine Corps gives notice that a Supplemental Environmental Assessment (SEA) has been prepared and that an Environmental Impact Statement (EIS) will not be prepared for the construction and operation of the Green Beach Operations Access Points (P-159A) project at Marine Corps Base, Camp Pendleton (MCB CamPen), California. The P-159A Environmental Assessment (EA), reference (c), described the potential environmental consequences that would result from the proposed construction and modification of new and existing transit and maneuver corridors. Since preparation of the P-159A EA, more detailed information for proposed bridge design/construction and the access road within the North County Transit District (NCTD) rail easement or right-of-way has become available, necessitating the preparation of the P-159A SEA, reference (d), which captures the expanded analysis of these project components. Therefore, the P-159A SEA, reference (d), focuses only on the proposed bridge design/construction and access road within the revised project footprint. Based on the analysis provided in reference (d), I have selected the Proposed Action/Preferred Alternative and find that this action will not have a significant impact on the human environment. Therefore, preparation of an EIS is not necessary.

FOR OFFICIAL USE ONLY

Subj: FINDING OF NO SIGNIFICANT IMPACT FOR NEPA 20020013A;
GREEN BEACH OPERATIONS ACCESS POINTS (P-159A), CAMP
PENDLETON

2. The primary purpose of the Proposed Action is to improve the tactical vehicle and troop transit between Green Beach and inland training areas at MCB CamPen. The secondary purpose is to construct a bridge system that would facilitate an increase in capacity and reliability by allowing trains to pass in the congested Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor. The Proposed Action is needed to support the current and future MCB CamPen operations/training requirements. Increasing the flexibility and accessibility of operational access routes is integral to gaining and maintaining the training corridors required to support the certification and readiness of Marine Expeditionary Force demands. In addition, the Proposed Action is needed to ensure that the future railway system is capable of moving passengers and freight in an efficient and timely manner.

3. Under the Proposed Action, the existing railway timber trestle bridge would be demolished and replaced with a new multi-span bridge system within the NCTD easement. The Proposed Action would improve the tactical vehicle and troop transit between Green Beach and inland training areas at MCB CamPen, as well as improve train capacity and reliability in the congested LOSSAN rail corridor. The Proposed Action will allow for bi-directional passing of the larger vehicles and equipment from Green Beach landing areas to the inland training areas.

4. The Proposed Action and the No-Action Alternative are evaluated in the SEA. Other design alternatives were considered but not carried forward for analysis for reasons set forth in the SEA.

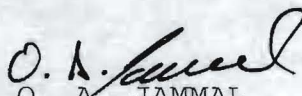
5. The Proposed Action would be implemented in the northern portion of MCB CamPen where the LOSSAN rail line crosses San Onofre Creek. Green Beach Bridge is also known as San Onofre Creek Bridge 208.6. The project limits are at the south approach to the bridge on the San Diego Subdivision and all required bridge work would occur within the limits of the NCTD easement. Elevated track work to tie in portions of new track would extend slightly further than these proposed ground level boundaries.

6. The SEA analyzes the potential environmental impacts resulting from implementation of the Proposed Action. The resources most likely to be affected by this action are topography, geology, and soils; hydrology; biological resources; cultural resources; air quality; and hazardous

Subj: FINDING OF NO SIGNIFICANT IMPACT FOR NEPA 20020013A;
GREEN BEACH OPERATIONS ACCESS POINTS (P-159A), CAMP
PENDLETON

materials/hazardous wastes. The potential environmental impacts of the Proposed Action on these resources were analyzed. Conversely, impacts to the following resources were considered to be negligible or non-existent and were not further analyzed in the EA: transportation, noise, land use, socioeconomic, environmental justice, aesthetics, utilities, and public health and safety. The Proposed Action will have negligible direct, indirect, or cumulative impacts on the quality of the local environment and will comply with all regulatory requirements. With incorporation of the Special Conservation Measures, impacts to all resources would be less than significant for the Proposed Action and the No-Action Alternative.

7. There would not be any disproportionately high and adverse human health or environmental effects from the selected alternative on minority or low-income populations. Nor will there be any impacts associated with the protection of children from environmental health and safety risks. The SEA and FONSI addressing this action are on file and may be reviewed at the place of origin: Commanding Officer, Marine Corps Base (Attn: Assistant Chief of Staff, Environmental Security), Camp Pendleton, California 92055-5010, telephone (760) 725-4512.


O. A. JAMMAL
Chief of Staff

Copy to:
Files

Final

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Lead Agency for the EA: United States Marine Corps

Title of Proposed Action: Green Beach Operations Access Points (P-159A)

Affected Jurisdiction: San Diego County

Designation: Supplemental Environmental Assessment

Abstract

The United States Marine Corps has prepared this Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act of 1969, 42 United States Code §§ 4321-4370h, as implemented by the Council on Environmental Quality Regulations, 40 Code of Federal Regulations Parts 1500-1508.

The P-159A Environmental Assessment (EA) that was completed in January 2010 (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2010a) described the potential environmental consequences that would result from the proposed construction and modification of new and existing transit and maneuver corridors. Transit and maneuver corridors are avenues or roads that facilitate the transit of troops and tactical vehicles between Green Beach and inland training areas at Marine Corps Base (MCB) Camp Pendleton, California. The MCB Camp Pendleton Environmental Impact Review Board approved the project on 15 December 2009. The Finding of No Significant Impact for the P-159A EA was signed on 08 January 2010. Since preparation of the P-159A EA, more detailed information for proposed bridge design/construction and the access road within the North County Transit District rail easement or right-of-way has become available, necessitating an expanded analysis of these project components. Major bridge replacement construction efforts would be restricted to within the railway easement; however, expected track work and bridge substructure work is expected to occur outside the limits of the previously analyzed project footprint in the P-159A EA. The new ground level footprint length for construction activities analyzed in this SEA extends 270 feet (82 meters). Therefore, the SEA focuses only on the proposed bridge design/construction and access road within this project footprint. This SEA evaluates the potential environmental impacts of the Proposed Action and the No-Action Alternative on the following resource areas: topography, geology, and soils; hydrology; biological resources; cultural resources; air quality; and hazardous materials and wastes.

Prepared By: United States Marine Corps

Point of Contact: Department of the Navy
Attn: Jesse Martinez, NAVFAC Project Manager
1220 Pacific Highway
Bldg. 1, Central IPT
San Diego, California 92132-5190
E-mail: jesse.w.martinez1@navy.mil
Tel. (619) 532-3844
Fax: (619) 532-4160

October 2011

EXECUTIVE SUMMARY

The United States Marine Corps (USMC) has prepared this Supplemental Environmental Assessment (SEA) pursuant to the National Environmental Policy Act of 1969, the Council on Environmental Quality regulations under 40 Code of Federal Regulations Parts 1500-1508 and Marine Corps Order P5090.2A, Change 2, Dated 21 May 2009, Environmental Compliance and Protection Manual.

The primary purpose of the Proposed Action is to improve the tactical vehicle and troop transit between Green Beach and inland training areas at Marine Corps Base (MCB) Camp Pendleton. The secondary purpose of the Proposed Action for this SEA is to construct a bridge system that would facilitate an increase in capacity and reliability by allowing trains to pass in the congested Los Angeles-San Diego-San Luis Obispo rail corridor.

The Proposed Action is needed to support the current and future MCB Camp Pendleton operations/training requirements. Increasing the flexibility and accessibility of operational access routes is integral to gaining and maintaining the training corridors required to support the certification and readiness of Marine Expeditionary Force demands. In addition, the Proposed Action is needed to ensure that the future railway system is capable of moving passengers and freight in an efficient and timely manner.

This SEA focuses only on the proposed bridge design/construction and access road within the project footprint. This SEA evaluates the potential environmental impacts of the Proposed Action and the No-Action Alternative on the following resource areas: topography, geology, and soils; hydrology; biological resources; cultural resources; air quality; and hazardous materials and wastes. Special conservation measures (SCMs) would be incorporated into the final design of the Proposed Action to minimize or eliminate environmental impacts. The No-Action Alternative does not meet the purpose of and need for the Proposed Action, but it does provide a measure of the baseline conditions against which the impacts of the Proposed Action can be compared.

Table ES-1 provides a summary of impacts by resource area for the Proposed Action and the No-Action Alternative. With the incorporation of the SCMs, impacts to all resources would be less than significant for the Proposed Action and the No-Action Alternative.

Table ES-1. Summary of Environmental Consequences

Resource Area	Proposed Action	No-Action Alternative
Topography, Geology, and Soils	•	•
Hydrology	•	•
Biological Resources	•	•
Cultural Resources	•	•
Air Quality	•	•
Hazardous Materials and Wastes	•	•

Note: • indicates that no significant impacts would occur.

FINAL

**SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
FOR THE GREEN BEACH OPERATIONS ACCESS POINTS (P-159A)****TABLE OF CONTENTS**

ACRONYMS	Inside Front Cover
EXECUTIVE SUMMARY	ES-1
CHAPTER 1 PURPOSE AND NEED FOR PROPOSED ACTION	1-1
1.1 INTRODUCTION	1-1
1.2 BACKGROUND	1-1
1.3 PROJECT LOCATION	1-2
1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION	1-3
1.5 REGULATORY SETTING	1-7
1.6 PERMITS AND AGENCY CONCURRENCES REQUIRED	1-7
1.7 ORGANIZATION OF EA	1-8
CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES	2-1
2.1 ALTERNATIVES CONSIDERED	2-1
2.1.1 Proposed Action (Preferred Alternative)	2-1
2.1.2 No-Action Alternative	2-4
2.1.3 Alternatives Considered but Eliminated	2-4
2.2 SUMMARY OF ENVIRONMENTAL CONSEQUENCES	2-4
2.3 PREFERRED ALTERNATIVE	2-5
2.4 SPECIAL CONSERVATION MEASURES	2-5
2.4.1 Special Conservation Measures Included in the P-159A EA	2-5
2.4.2 Special Conservation Measures Developed for this Supplemental EA	2-10
CHAPTER 3 EXISTING ENVIRONMENT	3-1
3.1 TOPOGRAPHY, GEOLOGY, AND SOILS	3-3
3.1.1 Definition of Resource	3-3
3.1.2 Existing Conditions	3-3
3.2 HYDROLOGY	3-6
3.2.1 Definition of Resource	3-6
3.2.2 Existing Conditions	3-6
3.3 BIOLOGICAL RESOURCES	3-9
3.3.1 Definition of Resource	3-9
3.3.2 Existing Conditions	3-9
3.4 CULTURAL RESOURCES	3-16
3.4.1 Definition of Resource	3-16
3.4.2 Existing Conditions	3-17
3.5 AIR QUALITY	3-20
3.5.1 Definition of Resource	3-20
3.5.2 Regulatory Setting	3-22

3.5.3	Existing Conditions	3-24
3.6	HAZARDOUS MATERIALS AND WASTES	3-28
3.6.1	Definition of Resource	3-28
3.6.2	Existing Conditions	3-29
CHAPTER 4 ENVIRONMENTAL CONSEQUENCES.....		4-1
4.1	TOPOGRAPHY, GEOLOGY, AND SOILS	4-1
4.1.1	Proposed Action	4-1
4.1.2	Mitigation Measures.....	4-2
4.1.3	No-Action Alternative.....	4-2
4.2	HYDROLOGY.....	4-2
4.2.1	Proposed Action	4-2
4.2.2	Mitigation Measures.....	4-3
4.2.3	No-Action Alternative.....	4-3
4.3	BIOLOGICAL RESOURCES	4-3
4.3.1	Proposed Action	4-3
4.3.2	Mitigation Measures.....	4-6
4.3.3	No-Action Alternative.....	4-6
4.4	CULTURAL RESOURCES.....	4-6
4.4.1	Proposed Action	4-6
4.4.2	Mitigation Measures.....	4-7
4.4.3	No-Action Alternative.....	4-7
4.5	AIR QUALITY	4-7
4.5.1	Proposed Action	4-8
4.5.2	Conformity Applicability Analysis	4-9
4.5.3	Mitigation Measures.....	4-9
4.5.4	No-Action Alternative.....	4-9
4.6	HAZARDOUS MATERIALS AND WASTES.....	4-9
4.6.1	Proposed Action	4-9
4.6.2	Mitigation Measures.....	4-10
4.6.3	No-Action Alternative.....	4-10
CHAPTER 5 CUMULATIVE EFFECTS		5-1
5.1	CUMULATIVE EFFECTS	5-1
5.1.1	Geographic Boundaries for Cumulative Impacts Analysis	5-1
5.2	PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS.....	5-2
5.2.1	MCB Camp Pendleton Military Family Housing PPV (Camp Pendleton Phase VI)	5-2
5.2.2	New Naval Hospital	5-2
5.2.3	New Main Exchange and Service Mall.....	5-2
5.2.4	Storm Repairs to Beach Club Road.....	5-2
5.2.5	Beach Club Road Redevelopment Area	5-3
5.2.6	Operations Access Points (P-159 Red Beach).....	5-3
5.2.7	NCTD Santa Margarita River Bridge Replacement and Second Track Project.....	5-3
5.2.8	Interstate 5 North Coast Corridor Project.....	5-3
5.2.9	Basewide Utility Infrastructure Improvements Project.....	5-3

5.2.10	Repair of 24 Access Roads.....	5-4
5.2.11	Grow the Force.....	5-4
5.2.12	MCB Camp Pendleton MFH PPV (Camp Pendleton Phase VII).....	5-4
5.2.13	Stuart Mesa Bridge.....	5-4
5.3	POTENTIAL CUMULATIVE IMPACTS BY ENVIRONMENTAL RESOURCE AREA	5-4
5.3.1	Topography, Geology, and Soils	5-4
5.3.2	Hydrology.....	5-5
5.3.3	Biological Resources.....	5-5
5.3.4	Cultural Resources	5-5
5.3.5	Air Quality.....	5-6
5.3.6	Hazardous Materials and Wastes	5-8
5.4	CONCLUSION	5-8
CHAPTER 6 OTHER CONSIDERATIONS REQUIRED BY NEPA		6-1
6.1	IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF NATURAL OR DEPLETABLE RESOURCES.....	6-1
6.2	RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM NATURAL RESOURCE PRODUCTIVITY	6-1
6.3	MEANS TO MITIGATE AND/OR MONITOR ADVERSE ENVIRONMENTAL IMPACTS.....	6-1
6.4	ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION.....	6-1
CHAPTER 7 REFERENCES		7-1
CHAPTER 8 LIST OF PREPARERS AND CONTRIBUTORS		8-1
CHAPTER 9 LIST OF AGENCIES CONSULTED.....		9-1

APPENDICES

APPENDIX A: AGENCY CORRESPONDENCE	A-1
APPENDIX B: RECORD OF NON-APPLICABILITY AND AIR QUALITY DATA	B-1

List of Figures

<u>Figure</u>		<u>Page</u>
1-1	Regional Location, MCB Camp Pendleton	1-4
1-2	Views of the Existing Green Beach Bridge (San Onofre Creek Bridge 208.6).....	1-5
1-3	Boundaries of the Green Beach Bridge Replacement.....	1-6
2-1	Proposed Action - Aerial View Green Beach.....	2-2
3.1-1	Regional Fault Zones.....	3-5
3.2-1	Green Beach Locations Observed to be Washed Out Following December 2010 Storm Events.....	3-8
3.3-1	Biological Resources within the Project Area	3-10
3.5-1	California and National Ambient Air Quality Standards.....	3-21

List of Tables

<u>Table</u>		<u>Page</u>
ES-1	Summary of Environmental Consequences	ES-1
2-1	Summary of Environmental Consequences	2-4
3.1-1	Soil Types within the Project Area	3-4
3.1-2	Major Active Faults in the Vicinity of the Project Area	3-6
3.3-1	Plant Community Acreages within the Project Footprint	3-11
3.3-2	Federally Listed or Candidate Plant and Animal Species Known to Occur or Potentially Occurring on MCB Camp Pendleton.....	3-13
3.5-1	Applicable Criteria Pollutant de minimis Levels (tons/year).....	3-22
3.5-2	Representative Air Quality Data for MCB Camp Pendleton (2007-2009).....	3-26
4.3-1	Temporary and Permanent Impacts to Plant Communities	4-4
4.5-1	Estimated Emissions Resulting from Implementation of the Proposed Action.....	4-9
5.3-1	Estimated GHG Emissions from Implementation of the Proposed Action	5-7

CHAPTER 1

PURPOSE AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

This Supplemental Environmental Assessment (SEA) has been prepared by the United States Marine Corps (USMC) in accordance with the National Environmental Policy Act (NEPA) of 1969. The P-159A Environmental Assessment (EA) that was completed in January 2010 (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2010a) described the potential environmental consequences that would result from the proposed construction and modification of new and existing transit and maneuver corridors. Transit and maneuver corridors are avenues or roads that facilitate the transit of troops and tactical vehicles between Green Beach and inland training areas at Marine Corps Base (MCB) Camp Pendleton, California. The MCB Camp Pendleton Environmental Impact Review Board approved the project on 15 December 2009. The Finding of No Significant Impact (FONSI) for the P-159A EA was signed on 08 January 2010. Since preparation of the P-159A EA, more detailed information for proposed bridge design/construction and the access road within the North County Transit District (NCTD) rail easement or right-of-way has become available, necessitating an expanded analysis of these project components (refer to Section 1.2, *Background*).

1.2 BACKGROUND

As described above, MCB Camp Pendleton prepared a Final EA for the Green Beach Operations Access Points Project (P-159A) in 2010. The Final EA analyzed the potential impacts associated with construction and modification of the existing transit and maneuver corridors that would facilitate and improve tactical vehicle and troop transit between Green Beach and inland training areas at MCB Camp Pendleton. As noted above, since then more detailed information for proposed bridge design/construction has become available. To replace the existing timber trestle bridge, additional construction activities would be required outside the previously assumed project footprint analyzed in the P-159A EA. The south abutment would require new slope protection and/or earth retaining structures as well as a new concrete abutment. At the northern limits of the project, track work would also be expected to be performed up to and possibly just beyond the edge of the existing steel girder bridge. Major bridge replacement construction efforts would be restricted to within the railway easement; however, track work and bridge substructure work would be expected to occur outside the limits of the previously analyzed project footprint in the P-159A EA. The new ground level footprint length for construction activities analyzed in this SEA extends 270 feet (82 meters [m]). This SEA focuses only on the proposed bridge design/construction and access road illustrated in Figure 2-1.

The project is located within the NCTD rail easement or right-of-way related to the maintenance of interstate commerce, so additional NEPA documentation and regulatory consultation by NCTD/San Diego Association of Governments (SANDAG) is required before initiating replacement bridge construction. It was determined that a SEA to the Green Beach Operations Access Points Project (P-159A) was the appropriate level of analysis to address the replacement of the Green Beach Bridge. All necessary environmental clearances and resource agency permits would be obtained before construction activities.

The primary objective of the Department of the Navy (DON)/USMC is to achieve a suitable access corridor for military vehicles to travel for training operations. Additional objectives are to connect this

crossing with adjacent road work projects and to provide a functional and lasting bridge system for continued and safe operations.

NCTD/SANDAG's objective is to continue mainline Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor capacity sufficient to handle existing and future freight and passenger service (SANDAG 2010). All required existing bridge demolition and new bridge construction would occur within the limits of the NCTD easement. For the purposes of analysis in this SEA, the NCTD railway easement footprint diameter at Green Beach extends 100 ft (30.5 m), which is 50 ft (15.2 m) on each side from the existing center lane track. The footprint length extends 10 ft (3 m) to the north of the southern limit of the existing steel bridge, and 260 ft (79 m) to the south of the southern limit of the existing steel bridge, for a total ground level footprint length of 270 ft (82 m) (refer to Figure 2-1). Ground level work along the north end of the bridge would terminate approximately 40 ft (12 m) south of the San Onofre Creek/Estuary. Elevated track work to tie in portions of new track would extend slightly further than these proposed ground level boundaries. It is difficult to estimate the exact length the new track would extend on both the south and north sides. Much of this length depends on the existing lengths of rail to the locations of the nearest rail splices or any utility locations such as signaling, junction boxes, and switches. However, the elevated replacement track work is not part of the ground level project footprint and would consist of an in-situ track replacement.

The proposed bridge and associated double track would increase capacity by allowing trains to pass each other in the congested LOSSAN rail corridor. The replacement bridge is vital to maintain mainline LOSSAN rail corridor capacity sufficiently to handle long term passenger service, Port of San Diego demand, cross border bulk goods movement, and regional demand for heavy bulk commodities. There is a strong regional demand for bulk commodities including lumber, steel, cement and paper. Inadequate rail capacity and reliability could limit long-term Port growth, with new customers and jobs moving to other west coast ports. Maintaining the movement of bulk goods on rail would avoid additional highway pavement damage and reduce emissions.

The following companies/agencies provide rail service on this portion of the LOSSAN corridor:

- Burlington Northern Santa Fe (BNSF) Railway: The BNSF railway operates freight rail service throughout the San Diego portion of the LOSSAN corridor seven days per week. Typically four to six freight trains per day are operated. BNSF freight service is both local and national in scope.
- Southern California Regional Rail Authority (SCRRA): SCRRA operates Metrolink commuter services from Orange County to Oceanside. The service currently provides 16 Metrolink trains per day Monday through Friday, 10 trains per day on Saturday, and 8 per day on Sunday.
- Amtrak: Amtrak operates 22 Pacific Surfliner trains per day on weekdays, and 24 per day on weekends. Major cities served are San Diego, Solana Beach, Oceanside, Los Angeles, Santa Barbara, and San Luis Obispo. The LOSSAN corridor is Amtrak's second busiest in the nation.

Implementation of the Proposed Action would achieve the purpose and need objectives of both the DON/USMC and NCTD/SANDAG.

1.3 PROJECT LOCATION

The Proposed Action would be implemented at MCB Camp Pendleton, the USMC's premier amphibious training center for the west coast (Figure 1-1). MCB Camp Pendleton is a 200-square mile (518-square kilometer [km]) area located primarily within the northern portion of San Diego County and is 40 miles (64 km) north of downtown San Diego. The MCB Camp Pendleton boundary is bordered to the

northwest by Orange County, north and east by the City of San Clemente and the Cleveland National Forest, east by the community of Fallbrook and the Naval Weapons Station–Seal Beach/Fallbrook Annex, and to the south by the City of Oceanside. Riverside County is north of - but not adjacent to - the MCB Camp Pendleton boundary. Regional access to MCB Camp Pendleton is provided by Interstate 5 (I-5) from the west and I-15 from the east via State Route 78 from the south.

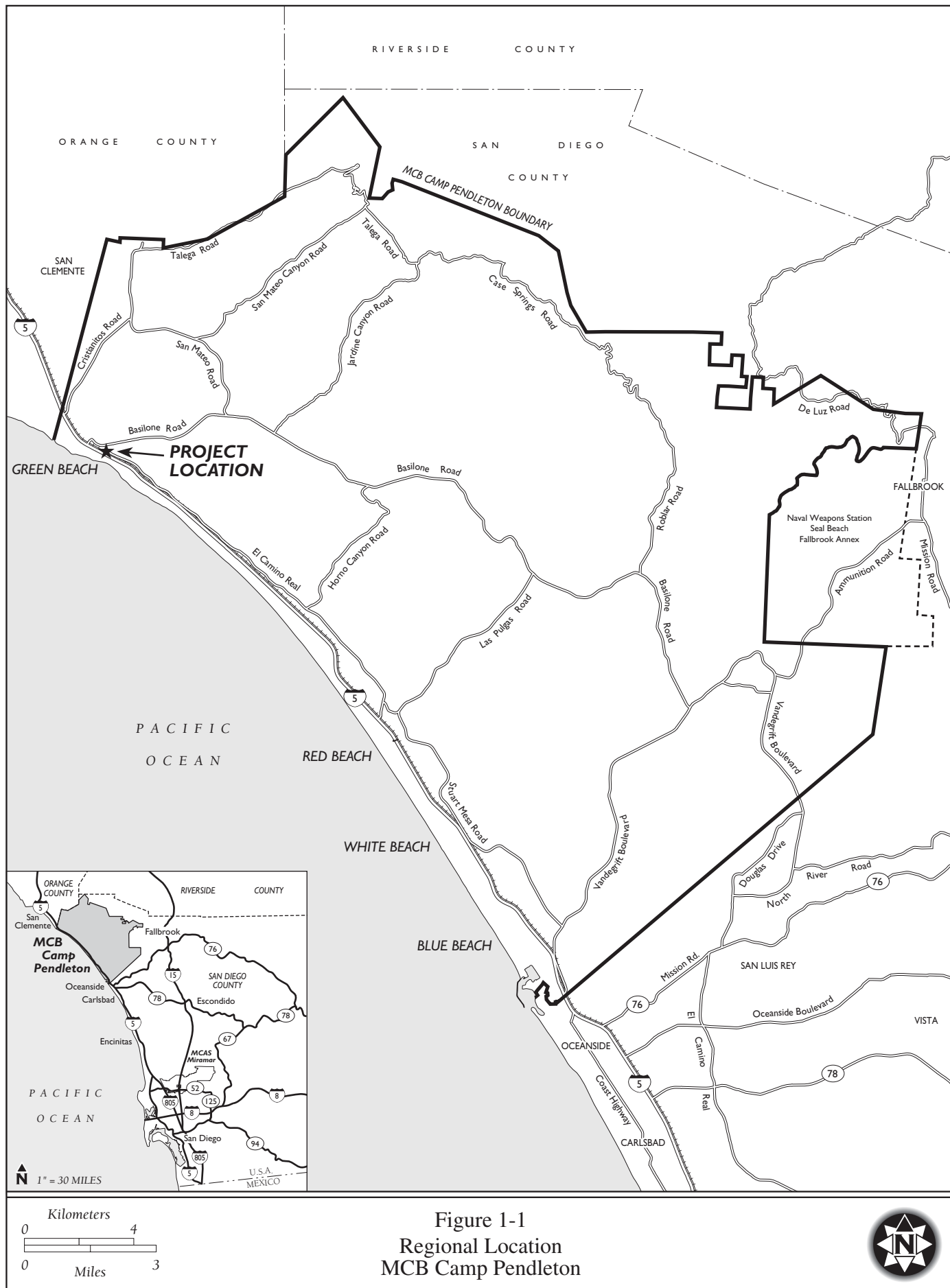
More specifically, the proposed project is located in the northern portion of Camp Pendleton where the LOSSAN rail line crosses the San Onofre Creek. Figure 1-2 includes photographs of the Green Beach Bridge, also referred to as the San Onofre Creek Bridge 208.6. The project limits are at the south approach to the bridge on the San Diego Subdivision and all proposed improvements would be located within the existing NCTD right-of-way or easement. Figure 1-3 illustrates the boundaries of the proposed bridge replacement, showing the north edge abutment and the south edge where the proposed retaining wall would be installed. As shown in Figure 1-3 the north abutment is adjacent to San Onofre Creek; however, the creek/estuary would be avoided during construction activities.

1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

As previously discussed, the P-159A EA focused on the potential impacts associated with construction and modification of the existing transit and maneuver corridors that would facilitate and improve tactical vehicle and troop transit between Green Beach and inland training areas at MCB Camp Pendleton. This SEA focuses only on the proposed demolition of the existing bridge, bridge replacement construction, and construction of the access road beneath the bridge (i.e., within the rail easement).

The primary purpose of the Proposed Action is to improve the tactical vehicle and troop transit between Green Beach and inland training areas at MCB Camp Pendleton. The secondary purpose of the Proposed Action is to construct a bridge system that would facilitate an increase in capacity and reliability by allowing trains to pass in the congested LOSSAN rail corridor (NCTD 2010).

The Proposed Action is needed to support the current and future MCB Camp Pendleton operations/training requirements. Increasing the flexibility and accessibility of operational access routes is integral to gaining and maintaining the training corridors required to support the certification and readiness of Marine Expeditionary Force demands. In addition, the Proposed Action is needed to ensure that the future railway system is capable of moving passengers and freight in an efficient and timely manner (NCTD 2010). Implementation of the Proposed Action would achieve the objectives of both the USMC and NCTD.





a) View of Green Beach Bridge South Trestle Pile Bents 1 to 5



b) View of Green Beach Bridge South Trestle Pile Bents 7 to 13

Figure 1-2
Views of the Existing Green Beach Bridge (San Onofre Creek Bridge 208.6)



a) View of the North Edge of the Green Beach Bridge Replacement



b) View of the South Edge of the Green Beach Bridge Replacement
(location of the proposed retaining wall)

Figure 1-3
Boundaries of the Green Beach Bridge Replacement

1.5 REGULATORY SETTING

The preparation of this SEA is based on NEPA requirements, as outlined in the following guidance documents:

- NEPA of 1969 [42 United States Code (U.S.C.) §§ 4321-4370h], which requires an environmental analysis for major federal actions having the potential to significantly impact the quality of the human environment
- Council on Environmental Quality (CEQ) Regulations [40 Code of Federal Regulations (CFR) Parts 1500-1508], which implement the requirements of NEPA
- DON procedures for implementing NEPA (32 CFR Part 775), which provide DON policy for implementing the CEQ regulations and NEPA
- Marine Corps Order P5090.2A, Change 2, Dated 21 May 2009, Environmental Compliance and Protection Manual, which establishes procedures for implementing NEPA

This SEA has also been prepared to address the following requirements:

- National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470-470x-6
- Archeological Resource Protection Act, 16 U.S.C. §§ 470aa-470mm
- Clean Water Act (CWA), 33 U.S.C. §§ 1251-1387
- Clean Air Act (CAA), as amended, 42 U.S.C. §§ 7401-7671q, including 1990 General Conformity Rule
- Endangered Species Act (ESA), 16 U.S.C. §§ 1531-1544
- Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712
- Coastal Zone Management Act (CZMA), 16 U.S.C. §§ 1451-1466
- Resource Conservation Recovery Act (RCRA), 42 U.S.C. §§ 6901-6992k
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601-9675
- Executive Order (EO) 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds
- EO 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045 – Protection of Children from Environmental Health Risks and Safety Risks
- EO 13148 – Greening the Government through Leadership in Environmental Management.
- EO 11990 – Protection of Wetlands
- EO 11988 – Floodplain Management

1.6 PERMITS AND AGENCY CONCURRENCES REQUIRED

The following permits and agency concurrences are anticipated with implementation of the Proposed Action:

- CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB) and Section 404 Permit from the U.S. Army Corps of Engineers (USACE). The

Section 401 Permit and Section 404 Permit (Nationwide Permit [NWP] #14-Linear Transportation) prepared in support of the P-159A EA referenced above were approved by the RWQCB and USACE. These permits will apply to and include the SEA because implementation of the Proposed Action presented in the SEA would not result in any impacts to RWQCB and USACE resources.

- California Coastal Commission – CZMA Consistency Provisions
- NHPA Section 106 – California State Historic Preservation Office (CASHPO) concurrence
- Informal Section 7, Endangered Species Act (ESA) consultation with U.S. Fish and Wildlife Service (USFWS)
- Real Estate Permits (e.g., Right of Entry permit and highway/railway construction permit)

1.7 ORGANIZATION OF EA

Following Chapter 1, this SEA is organized as follows: Chapter 2 describes the Proposed Action and alternatives, Chapter 3 describes the affected environment, Chapter 4 describes the environmental consequences of each alternative, Chapter 5 describes the cumulative impacts of the action alternatives in conjunction with other projects in the area, and Chapter 6 addresses various other considerations required by NEPA. This is followed by references (Chapter 7), list of preparers and contributors (Chapter 8), and a list of agencies consulted (Chapter 9).

CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

Chapter 2 describes the Proposed Action, the No-Action Alternative, and the alternatives considered but eliminated from detailed analysis. A brief summary of the environmental impacts of each alternative is provided.

2.1 ALTERNATIVES CONSIDERED

Two alternatives are carried forward for detailed analysis in this EA: the Proposed Action (Preferred Alternative), and the No-Action Alternative. These alternatives are described below. For the purposes of this SEA, only the Proposed Action, which consists of full replacement of the timber trestle bridge, would meet the purpose and need for the project. The partial timber trestle replacement was considered but eliminated from further consideration in this SEA and is discussed in further detail in Section 2.1.3.

2.1.1 Proposed Action (Preferred Alternative)

The Proposed Action is the Preferred Alternative and consists of demolishing the existing railway trestle and constructing a 220 ft (67 m) bridge system with four 55 ft (16.8 m) spans within the NCTD right-of-way (Figure 2-1). The bridge system would be supported by five bents with two cast-in-drilled-hole (CIDH) concrete piles per bent for a total of ten CIDH piles. This design meets the objectives for both USMC and NCTD.

It is anticipated that the proposed construction would begin in fiscal year (FY) 2011 and be completed in FY 2012. Implementation of the Proposed Action is expected to be completed within approximately 12 months with up to 40 construction workers on-site at any given time (NAVFAC SW 2010b). To minimize disruption to railway transit an accelerated construction schedule would occur for the in-line replacement of the railway track work, and construction activities would occur within three phases as described below.

2.1.1.1 Phase One: Construction of the New Bridge Substructure

The first phase would consist of construction of the new bridge's substructure. The new bridge would be supported by 10 CIDH concrete piles which would be approximately 30 ft (9.1 m) below ground surface and would be approximately 3 to 5 ft (0.9 to 1.5 m) in diameter. The holes for CIDH piles would require dewatering. Groundwater dewatering disposal for construction of the substructure would be conducted in accordance with the regulatory requirements stated in Section 2.4.1.1. CIDH piles would be installed for the five bents and piers and would be installed just outside the existing timber trestle piers. All required earthwork, excavation, and fill would be performed in this phase. The equipment mix for this phase would include earth movers and/or excavators, CIDH pile drills, cranes, and material haulers. The duration of the phase one construction activities would be approximately three months (NAVFAC SW 2010b). It is anticipated that no track closures would be required during phase one.

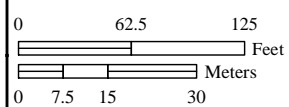


Figure 2-1
Proposed Action - Aerial View
Green Beach



2.1.1.2 Phase Two: Span by Span Demolition and Construction

Phase two construction activities would occur after all of the CIDH pilings have been installed. To construct the abutment and pier caps, the span by span closure of the track would be required. The pier caps would either be cast-in-place concrete or a type of precast system to accommodate an expeditious build. Span by span demolition of the timber trestle bridge would occur concurrently with installation of the pier caps, superstructure girders, ballast, ties, and the new track to connect to the adjacent track. The existing timber trestles would be cut to below ground level. Since the existing timber trestles are old and rotted, attempts to excavate and remove the piles completely would likely result in the trestles breaking up. The existing timber piles are coated with creosote, and would be disposed of properly at a landfill that accepts creosote-treated piles. All USEPA, Occupational Safety and Health Administration, and U.S. Department of Transportation regulations for removal, handling, labeling, transportation, and disposal would be followed.

The bridge deck and track replacement actions would take place during several weekends when absolute work windows are required for construction activities. Absolute work windows typically are only allowed from 10:30 pm on Friday until 4:00 am on Monday. This action would, understandably, result in a transportation impact due to the interruptions to train service between San Clemente and San Diego. However, this type of impact is routinely mitigated. For the Green Beach project, NCTD and SANDAG would coordinate with Amtrak and Metrolink to provide a bus bridge between San Clemente and Oceanside. Each span reconstruction would be accomplished within the temporary closures allotted. Up to eight railway track closures would be expected, each lasting approximately 56 hours. To minimize disruption in railway transit, closures would typically occur during low corridor volume times and on the weekends. This process would repeat for each of the three new spans with temporary closures of the track occurring until the new bridge construction has been completed.

In addition, a new retaining wall would be installed at the southern-most abutment to replace the existing timber wall system (refer to Figure 2-1). The new retaining wall would be constructed in conjunction with construction of the southern-most abutment and would occur during a designated railway track closure. To expedite construction and avoid lengthy railway track closures, it is likely that the retaining wall system would consist of a soldier pile wall, which would require limited excavation, compared to a cast-in place retaining wall. A soldier pile wall is a retaining wall constructed by installing driven or cast vertical piles or caissons with horizontal lagging beams spanning between the piles to retain the soil behind the lagging. The soldier piles may be constructed with driven steel piles, treated timber, precast concrete or steel sheet piles placed in drilled holes and backfilled with concrete or cast-in-place reinforced concrete. The piles are then faced with a lagging of either treated timber, reinforced shotcrete, reinforced cast-in-place concrete, precast concrete or metal members. These walls can be constructed in either cut or fill situations, and can be constructed in a top-down type manner limiting the need for excessive excavation and backfilling on the retained soil side.

The equipment mix for this phase would include earth movers and/or excavators, cranes, material haulers, and demolition equipment. Disposal of demolition and construction debris would be recycled to the maximum extent possible and would not be disposed of in San Onofre Creek or any other nearby waterways. The duration of the phase two construction activities would be approximately six months (NAVFAC SW 2010b).

2.1.1.3 Phase Three: Roadwork

Phase three construction activities would consist of construction of a new access road and other roadway work within the NCTD easement area/project footprint to link with the Green Beach Operations access

point project (P-159A). Temporary closures of the existing access road would occur during the first two phases; however, during this final construction phase longer closures of the existing access road would be required until the new access road alignment has been completed. Temporary detouring of training vehicles, personal vehicles, and pedestrian traffic would occur until the new access road has been completed. The duration of the phase three construction activities would be approximately three months (NAVFAC SW 2010b).

2.1.2 No-Action Alternative

Under the No-Action Alternative, the USMC and NCTD would not replace the existing trestle bridge with a new multiple span bridge system to facilitate the transit of tactical vehicles and troops between Green Beach and inland training areas at MCB Camp Pendleton.

Although the No-Action Alternative is not considered a reasonable alternative because it does not meet the purpose of and need for the Proposed Action as required under CEQ regulations (40 CFR § 1502.14[d]), it does provide a measure of the baseline conditions against which the potential adverse impacts of the Proposed Action can be compared. As such, the No-Action Alternative is carried forward for analysis. The No-Action Alternative for this EA represents the baseline conditions described in Chapter 3, Affected Environment.

2.1.3 Alternatives Considered but Eliminated

Partial Removal Alternative

The partial removal of the existing timber trestle bridge would be similar to the Proposed Action, but would not involve replacement of the entire wooden trestle to accommodate site development requirements (i.e., two-lane access road). This alternative was described as Alternative 1 – Option B in the P-159A EA. Upon closer evaluation of this alternative, it was determined that partial removal of the bridge would not be a feasible option since the timber trestle bridge is old and deteriorating, and requires complete replacement to meet current seismic and structural requirements. This alternative would not meet the purpose and need for the Proposed Action; therefore, this alternative was considered but eliminated from detailed analysis.

2.2 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The following resource areas are analyzed in this SEA: topography, geology and soils; hydrology; biological resources; cultural resources; air quality; and hazardous materials and wastes. Table 2-1 provides a summary of the environmental consequences, by resource, for the Proposed Action and the No-Action Alternative. Chapter 4 provides a detailed discussion of the environmental consequences.

Table 2-1. Summary of Environmental Consequences

Resource Area	Proposed Action (Preferred Alternative)	No-Action Alternative
Topography, Geology, and Soils	•	•
Hydrology	•	•
Biological Resources	•	•
Cultural Resources	•	•
Air Quality	•	•
Hazardous Materials and Wastes	•	•

Note: • indicates that no significant impacts would occur.

2.3 PREFERRED ALTERNATIVE

Based on the analysis presented in this SEA, the USMC has identified the Proposed Action as the Preferred Alternative.

2.4 SPECIAL CONSERVATION MEASURES

Implementation of the Green Beach Operations Access Points as proposed would include incorporation of the same conservation measures as listed in the P-159A EA to avoid, minimize, and compensate for potential effects on listed species, as well as avoid and minimize effects on other environmental resources. These measures are included in Section 2.4.1 below and were based upon review of potential project effects and the incorporation of relevant measures from other projects on MCB Camp Pendleton (refer to Section 5.2 for a list of relevant past and present projects), including terms and conditions from previous consultations with USFWS and informal consultation with USFWS for the P-159A EA (refer to Appendix C of the P-159A EA). Section 2.4.2 includes additional SCMs developed for this SEA.

In March 2010, MCB Camp Pendleton prepared a Conceptual Mitigation Plan (CMP) for the P-159A project which was submitted to the USACE as part of the NWP application. A jurisdictional delineation was completed in March 2009 and it was determined that impacts could occur on up to 0.03 acre (0.012 hectare) of jurisdictional wetlands. The CMP proposed a mitigation site at a standard 2:1 ratio for wetland impacts. This wetland mitigation site is shown on Figure 2-1, and it is anticipated that at least 0.08 acre (0.032 hectare) of brackish wetland habitat would be created and restored with implementation of the CMP (MCB Camp Pendleton 2010a).

2.4.1 Special Conservation Measures Included in the P-159A EA

2.4.1.1 General Conservation Measures

1. A contractor education program would be conducted by a qualified biologist with oversight by MCB Camp Pendleton Assistant Chief of Staff – Environmental Security (AC/S ES) personnel. It would be conducted during all project phases and would cover the potential presence of listed species; the requirements and boundaries of the project; the importance of complying with avoidance, minimization, and compensation measures; and problem reporting and resolution methods.
2. All mechanized clearing and grading, vehicle traffic, equipment staging, and the deposition of soil would be confined to the footprints analyzed in this EA or to other disturbed or developed land. Construction site and laydown area boundaries would be clearly delineated by fencing at least 7 days before project initiation.
3. Heavy equipment and construction activities would be restricted to existing roads and disturbed areas to the maximum extent practicable. Staging areas would be located in disturbed habitats and would be delineated on the grading plans. Vehicle operation and laydown areas would be defined by staking and flagging between stakes to prevent operations outside these areas. MCB Camp Pendleton AC/S ES would review and approve the defined laydown areas.
4. A Hazardous Waste Management Plan would be prepared for the project. The contractor, in consultation with AC/S ES, would evaluate, before shipment of any materials off-site, whether the material is regulated as a hazardous waste or material. The contractor would minimize the generation of hazardous waste to the maximum extent practicable and would take all necessary precautions to avoid mixing clean and contaminated wastes. The contractor would identify and evaluate recycling and reclamation options as alternatives to land disposal.

5. Wildfires would be prevented by exercising care when driving and by not parking vehicles in tall grass, which can be ignited by catalytic converters. Construction trucks would carry water and shovels or fire extinguishers in the field. The use of shields, protective mats, or other fire prevention equipment would be used during grinding and welding to prevent or minimize the potential for fire. No smoking or disposal of cigarette butts would take place within vegetated areas.
6. In conjunction with final design, a Stormwater Management Plan and a Stormwater Pollution Prevention Plan (SWPPP) would be prepared for the project. A Notice of Intent would be submitted to the Regional Water Quality Control Board (RWQCB) and a copy of the SWPPP would be kept at the construction site. AC/S ES Stormwater Branch would oversee implementation and enforcement of the SWPPP. The SWPPP would incorporate best management practices (BMPs) for erosion and sedimentation controls, such as silt fences, silt basins, gravel bags, or other measures to control erosion and prevent the release of contaminants that could be harmful to federally listed species. All construction activities with the potential of impacting water quality due to the runoff from the site would be conducted in accordance with SWPPP requirements.
7. Construction fencing would be placed between the laydown area and the estuary to prevent disturbance of the estuary. In addition, silt fencing would be placed inside of the construction fencing to prevent sedimentation.
8. Exposed soils would be temporarily protected from erosion as necessary during rainfall events, and erosion and sedimentation controls would be installed immediately downslope of work areas. Erosion and sediment control measures would be maintained until work is completed and graded areas have been re-contoured, physically stabilized, and planted.
9. No excavated or fill material would be placed in a delineated CWA Section 404 water of the U.S. except as authorized by a permit from the U.S. Army Corps of Engineers (USACE). Concreting operations would be conducted to ensure discharge water associated with these operations does not reach surrounding water bodies or pools unless specifically authorized in a CWA discharge permit.
10. Dust migration in or adjacent to riparian areas would be minimized by lightly spraying areas of exposed soil with water during excavation and grading activities when weather conditions require the use of dust control measures.
11. Fueling of equipment would not occur within 100 ft (30 m) of San Onofre Creek. An appropriate fueling area would be marked on construction plans. Emergency provisions would be in place at all crossings before the onset of construction to prevent accidental spills from contaminating downstream habitats.
12. The action proponent, or their contractor, would ensure that construction and demolition debris (including asphalt or concrete) resulting from construction activities be properly disposed of and would not be discarded onsite. In the event of excavation of asphalt or concrete, excess material would be disposed of in accordance with California Code of Regulations Title 14, Division 3, Article 5.9.
13. An Environmental Protection Plan would be submitted for approval by AC/S ES before the start of construction activity. Before submittal of the plan, the contractor would meet with AC/S ES to discuss implementation of the plan, possible subsequent revisions and additions to the plan, including reporting requirements, and methods for administering the plan.

14. All trash would be disposed of properly. All equipment and waste would be removed from the site. The soil would be re-contoured before habitat restoration and the site would be restored to as near the original biological condition as possible once the project is completed. At least fifty percent (50%) of the construction and demolition debris generated would be diverted from placement in a landfill through recycling or reuse (Marine Corps Order P5090.2A, Change 2, Dated 21 May 2009).
15. Disturbed soils would be kept free of invasive and non-native plants (i.e., weeded), for a minimum period of five years. The control of noxious weeds in temporarily disturbed areas of this riparian ground is mandated by the Riparian/Estuarine Biological Opinion (BO) (USFWS 1995a). Non-native plants and noxious weeds would be prevented from establishing in the temporarily disturbed areas, either by hand-weeding or selective application of herbicide.
16. Any riparian vegetation permanently, or temporarily cleared at the project site would be mitigated for, using the mitigation ratios outlined in the Riparian/Estuarine BO (USFWS 1995a). Temporary impacts to riparian vegetation would be restored immediately following project completion. Restoration would be conducted consistent with a restoration plan reviewed and approved by AC/S ES and USFWS before initiating the project.
17. Any soil exposed due to project activities would be planted with native species historically/previously located in the project area.
18. The project would include installation of a vegetated bioswale to treat runoff from the roadway following project completion, minimizing potential effects of the project on federally listed species and their habitat. Specific design information regarding the vegetated bioswale would be provided to Public Works, Facilities Maintenance, and the Stormwater Branch of Environmental Security, for review and approval before installation.
19. No off-road vehicle use would occur outside of the project boundary. Off-road construction vehicle operations within the project boundary would be conducted in such a manner as to minimize the impact on the existing vegetation, wildlife, and terrain in accordance with Marine Corps Order P5090.2A, Change 2, Dated 21 May 2009.
20. If night work and lighting is required, a qualified biologist would monitor all night-time construction activities in and adjacent to sensitive habitat to avoid disturbance to listed species. Any night lighting used would be shielded and directed away from sensitive habitat.
21. Occupied nests of migratory birds will not be destroyed. The removal of vegetation or structures (including portions of overpasses and bridges) that could support nesting migratory birds will occur between September and March, i.e. outside of the nesting season of most migratory species, wherever practicable. Where this is not practicable, a qualified biologist, provided by the project proponent, would survey the affected area to confirm that no nests are present. Where appropriate to allow construction during the breeding season, portions of structures may be screened during the non-breeding season to prevent subsequent nesting.
22. Groundwater dewatering disposal (land, sanitary sewer, storm drain, or surface water) would be conducted in accordance with the following regulatory requirements:
 - Dewatering discharges to land would comply with San Diego RWQCB Resolution No. R9-2007-0104, "Conditional Waivers of Waste Discharge Requirements for Specific Types of Discharge within the San Diego Region."

- Dewatering discharges to land that cannot comply with R9-2007-0104 would be covered under Waste Discharge Requirement issued by RWQCB, with a complete Report of Waste Discharge submitted to the RWQCB at least 120 days before commencement of the discharge.
- Dewatering discharges to the sanitary sewer would be accomplished in coordination with AC/S ES Waste Water Branch at 725-9760, with final approval to discharge given by the AC/S ES Facilities Wastewater Operation Supervisor at 725-4018. The discharger would receive specific instructions from the Wastewater Branch for sampling, desilting, and water release requirement to the sanitary sewer system before the commencement of the discharge.
- Dewatering discharges to the storm drain system or surface waters would comply with RWQCB Order No. R9-2008-0002, “General Waste Discharge Requirements for Discharges from Groundwater Extraction and Similar Discharges to Surface Waters within the San Diego Region except for San Diego Bay.” Application for coverage under this permit would be submitted to the RWQCB at least 60 days before the planned commencement of the discharge.

2.4.1.2 Avoidance, Minimization, and Compensation Measures for Protected Species

The action alternatives would employ protective measures for the coastal California gnatcatcher (CAGN) *Poliophtila californica californica*, least Bell’s vireo (LBVI) *Vireo bellii pusillus*, southwestern willow flycatcher (SWF) *Empidonax traillii extimus*, tidewater goby (TWG) *Eucyclogobius newberryi*, and the habitats that support these species. The project would be implemented consistently with the programmatic Riparian/Estuarine BO (USFWS 1995a). Additional avoidance and minimization measures for CAGN, LBVI, SWF, and TWG are based upon relevant measures from other projects on MCB Camp Pendleton such as the 2004 BO regarding CAGN at the Tertiary Treatment Plant and Associated Facilities (USFWS 2004), from the Integrated Natural Resources Management Plan (INRMP) (USMC 2007), and from informal consultation with the USFWS for the Proposed Action (USFWS 2009; refer to Appendix C of the P-159A EA).

- A contractor education program would be conducted by a qualified biologist with oversight by MCB Camp Pendleton AC/S ES personnel. It would be conducted during all project phases and cover the potential presence of listed species, the requirements and boundaries of the project, the importance of complying with avoidance, minimization, and compensation measures; and problem reporting and resolution methods. The qualified biologist would ensure the placement of signs indicating the necessity for all activities to be strictly confined to the project site.
- A qualified biologist familiar with CAGN, LBVI, SWF, and TWG and their habitats would be responsible for overseeing construction to ensure compliance with the conservation measures and for preventing unanticipated impacts to federally listed species. The qualified biologist would be onsite during vegetation removal and other construction activities with the potential to impact federally listed species.
- Since project designs are not yet finalized, the project footprint, including staging areas and temporary access roads, would be sited to avoid and minimize impacts to native habitats with listed species. Final construction designs for the project would be provided to the AC/S ES for distribution to the USFWS at least 30 days before project initiation. These designs would include the final footprint of all facilities relative to federally listed species and their habitats and a table showing the final permanent and temporary impacts by habitat type.

- Final construction design would incorporate fencing, signage, and pathways to direct foot and vehicular traffic away from coastal sage scrub (CSS) and riparian habitat that may support CAGN, LBVI, SWF, or TWG near the project site. Removal of coastal sage scrub and riparian habitat that could support listed species would be minimized, and if unavoidable, mitigated for.

Coastal California Gnatcatcher (CAGN), Least Bell's Vireo (LBVI), Southwestern Willow Flycatcher (SWF)

- Initial site clearing of CSS vegetation would take place only outside of the CAGN breeding season to the maximum extent practicable. The breeding season for CAGN is from 15 February to 31 August. Wherever feasible, construction activities in or adjacent to CSS habitats would occur outside of the breeding season for the CAGN. Compensation for unavoidable direct effects to habitat occupied by CAGN would require compensation of upland habitat enhancement or restoration at a 2:1 ratio to increase gnatcatcher-suitable habitats as a result of a permanent loss of acreage, and a minimum of 1:1 for the temporary loss of acreage.
- Clearing of woody riparian vegetation would take place only outside of the LBVI and SWF breeding season to the maximum extent practicable. The breeding season for LBVI and SWF is from 15 March to 31 August. Subsequent construction in woody riparian habitat would occur outside of the LBVI/SWF breeding season whenever feasible. Any riparian habitat that is cleared for construction would be revegetated (i.e., in-place mitigation) or, if that is not possible, would be compensated according to the ratios mandated by the Riparian/Estuarine BO (USFWS 1995a).
- The final acreages of riparian vegetation that are cleared (woody or herbaceous) would be reported to MCB Camp Pendleton's AC/S ES, Wildlife and Land Management Branch natural resources specialists for recording into the Riparian Biological Opinion Yearly Report.
- If breeding season avoidance is not practicable, then the following additional measures would be applied for CAGN, LBVI, and SWF:
 - Within 7 days before clearing habitat, a qualified biologist, provided by the project proponent would perform a pre-construction nest survey for CAGN, LBVI, and SWF and active nests in all suitable habitat within 250 ft (76 m) of the proposed construction area.
 - If an active CAGN, LBVI, or SWF nest occurs within 250 ft (76 m) of the proposed construction corridor, the qualified biologist would report the nest to the AC/S ES, Wildlife Management Branch. A weekly nest status report would also be sent to AC/S ES, Wildlife and Land Management Branch.
 - Construction activities, other than the use of existing roads, would not be conducted within 250 ft (76 m) of an active CAGN, LBVI, or SWF nest. The area within 250 ft (76 m) would be avoided until the nest fails or until at least 10 days after young fledge from the nest, unless the Marine Corps and USFWS mutually agree that disturbance is not likely.
- A contractor education program would be conducted by a qualified biologist with oversight by MCB Camp Pendleton AC/S ES personnel. It would be conducted during all project phases and cover the potential presence of listed species, the requirements and boundaries of the project, the importance of complying with avoidance, minimization, and compensation measures; and problem reporting and resolution methods. The qualified biologist would ensure the placement of signs indicating the necessity for all activities to be strictly confined to the project site.

- Disturbed soils would be stabilized and re-planted with native species that are consistent with pre-existing vegetation. Any temporarily cleared areas of CSS or riparian habitat would be re-planted with local native species (species and quantities to be approved by AC/S ES) immediately following completion of construction activities. The re-seeded areas would be posted for future avoidance by military traffic, inspected bi-annually to document results, and weeded or re-seeded as necessary until native species are reestablished within the affected area(s).
- All unavoidable impacts to riparian habitat would be compensated for in accordance with the Riparian/Estuarine BO (USFWS 1995a). The compensation strategy may include exotic plant control and off-site habitat restoration, or may use advance mitigation credits generated from exotic invasive weed treatments in the Santa Margarita River.
- AC/S ES Land Management Branch would review and approve the replanting strategy, monitoring methods, and performance criteria to satisfy restoration requirements. Non-native plants, including noxious weeds (as listed by the California Invasive Plant Council), would be prevented from establishing in disturbed sites, either by hand-weeding or the selective application of herbicide to the target species, using an U.S. Environmental Protection Agency (USEPA)-approved herbicide and manner of application which would not have toxic effects on fish and wildlife or non-target plant species.

Tidewater Goby (TWG)

The following design objectives developed by AC/S ES Land Management Branch would be incorporated into the engineering design to protect San Onofre Creek and TWG from potential indirect environmental impacts:

- Construction equipment, vehicles, and workers would remain outside any areas of flowing or standing water associated with San Onofre Creek. Final construction designs would avoid altering the vegetated stream banks. Existing riparian vegetation would be retained as much as possible to provide a buffer between work areas and the stream channel, and areas of bare soil would be covered or stabilized temporarily to reduce erosion and sedimentation. Construction BMPs would be installed to limit particle transport from disturbed soils and substrate. Erosion control measures would be reviewed by AC/S ES personnel before implementation.
- Installation of the retaining wall would occur during the dry season when the water in San Onofre Creek has receded below the project footprint. A qualified biologist would be onsite during vegetation removal and other construction activities with the potential to impact TWG.

2.4.2 Special Conservation Measures Developed for this Supplemental EA

1. NCTD would coordinate with other rail operators, Metrolink, Amtrak, and BNSF during design and construction of the new Green Beach Bridge.
2. NCTD would provide flagging services during construction of the new Green Beach Bridge.
3. While the project Area of Potential Effect (APE) does not contain elements contributing to SDI-1074's significance, it is possible that isolated materials of cultural sensitivity and/or archaeological significance may exist within secondary contexts in the project area. Therefore, a professional archaeologist and a Native American representative would monitor all construction activity to ensure that the project does not adversely affect cultural resources that may be discovered during construction. A monitoring and discovery plan must be submitted 30 days before construction begins, for approval by the AC/s Cultural Resources Branch Head. A technical monitoring report

would be prepared and submitted to the CASHPO upon the project's completion as stated in the CASHPO correspondence letter dated 30 October 2009 (refer to Appendix C of the P-159A EA).

4. As stated in the CASHPO correspondence letter dated 30 October 2009, SDI-1074 (including a buffer zone around the site) would be fenced off during construction activities to prevent inadvertent impacts from equipment during construction activities.
5. Biological monitoring would be required for any construction within the riparian bird species breeding season. Regarding jurisdictional waters of the U.S. and wetlands, the biological monitor must have completed a CWA permitting class, have a Natural Resource degree and at least one year of experience with permit monitoring.
6. **USACE Jurisdictional Waters of the U.S. and Wetlands.** The USACE NWP General Conditions listed below would be implemented during construction:
 1. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.
 2. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.
 3. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
 4. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).
 5. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.
 6. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.
 7. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).
 8. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA approved state or local floodplain management requirements.

9. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.
10. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
11. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.
12. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.
13. Endangered Species.
 - (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.
 - (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.
 - (c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have “no effect” on listed species or critical habitat, or until Section 7 consultation has been completed.
 - (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.
 - (e) Authorization of an activity by a NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the U.S.

FWS or the NMFS, both lethal and non-lethal “takes” of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide Web pages at <http://www.fws.gov/> and <http://www.noaa.gov/fisheries.html> respectively.

14. Historic Properties.

(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide

documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

15. Designated Critical Resource Waters. Critical resource waters include: NOAA designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWP 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

16. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if a NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

17. **Water Quality.** Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of a NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.
18. **Coastal Zone Management.** In coastal states where a NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.
19. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

20. Use of Multiple NWPs. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.
21. Transfer of NWP Verifications. If the permittee sells the property associated with a NWP verification, the permittee may transfer the NWP verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the NWP verification must be attached to the letter, and the letter must contain the following statement and signature: "When the structures or work authorized by this NWP are still in existence at the time the property is transferred, the terms and conditions of this NWP, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this NWP and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below." (Transferee) (Date)
22. Compliance Certification. Each permittee who received a NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:
 - (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;
 - (b) A statement that any required mitigation was completed in accordance with the permit conditions; and
 - (c) The signature of the permittee certifying the completion of the work and mitigation.
23. Pre-Construction Notification.
 - (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:
 - (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
 - (2) Forty-five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written

notification from the Corps that is “no effect” on listed species or “no potential to cause effects” on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of a NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. 32 Subsequently, the permittee’s right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed project;
- (3) A description of the proposed project; the project’s purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);
- (4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;
- (5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
- (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and
- (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed

work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWP and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN.

Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either:

- (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit;
 - (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or
 - (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.
24. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

CHAPTER 3

EXISTING ENVIRONMENT

This chapter describes the existing environmental conditions in and around MCB Camp Pendleton for resources potentially affected by implementation of the Proposed Action described in Chapter 2. Information presented in this chapter represents baseline conditions against which the Proposed Action and No-Action Alternative are evaluated to identify potential impacts (refer to Chapter 4). In compliance with NEPA, CEQ regulations, and DON and USMC procedures for implementing NEPA, the description of the affected environment focuses only on those resources potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of impact. Accordingly, the discussion of the affected environment (and associated environmental analyses) focuses on topography, geology, and soils; hydrology; biological resources; cultural resources; air quality; and hazardous materials and wastes within the affected area for each resource. Conversely, the following resource areas were not carried forward for analysis in this SEA, as potential impacts were considered to be negligible or non-existent:

Transportation. Upon completion of construction, the roads in the project area would not be subject to significantly higher traffic volumes. Although construction and modification to existing transit and maneuver corridors would occur, the improvements would increase flexibility and accessibility of operational access routes for tactical vehicles traveling between Green Beach and inland training areas at MCB Camp Pendleton. However, no increase in operational tempo (i.e., frequency and magnitude of vehicular use) of the training corridor would occur with implementation of the Proposed Action or No-Action Alternative. The railway bridge replacement would, understandably, result in the interruption of train service between San Clemente and San Diego. However, this type of impact is routinely mitigated. To minimize disruption to railway transit an accelerated construction schedule would occur for the in-line replacement of the railway track work, and construction activities would occur within three phases as described in Chapter 2. NCTD and SANDAG would coordinate with Amtrak and Metrolink to provide a bus bridge between San Clemente and Oceanside. Each span reconstruction would be accomplished within the temporary closures allotted. Up to eight railway track closures would be expected, each lasting approximately 56 hours. To minimize disruption in railway transit, closures would typically occur during low corridor volume times and on the weekends. Construction would typically only occur from 10:30 pm on Friday until 4:00 am on Monday. This process would repeat for each of the three new spans with temporary closures of the track occurring until the new bridge construction has been completed. Upon completion of the Proposed Action, the bridge replacement system would efficiently accommodate existing and future rail traffic along the congested LOSSAN rail corridor. Therefore, no significant impacts to transportation would occur with implementation of the Proposed Action.

The No-Action Alternative would maintain the status quo, would not accommodate the USMC tactical training transit, and would continue to cause delays along the LOSSAN rail corridor.

Noise. The project site is subject to high levels of noise due to the I-5 overpasses and frequent commuter and cargo train trips along the railway. Noise levels at the site are likely highest during rush hour traffic. Construction noise associated with the Proposed Action and No-Action Alternative would be neither extreme nor unusual. There are no sensitive noise receptors (residences, biological resources) in the vicinity of the site. Therefore, no significant impacts related

to noise would occur under the Proposed Action or No-Action Alternative. Noise-related impacts specific to wildlife are addressed in Biological Resources.

Land Use and Recreation. The project site is a training area at MCB Camp Pendleton. The Proposed Action has been sited in accordance with the Base Master Plan, base land and facilities use, and the Base Exterior Architectural Plan land use development guidelines addressing safety, functionality, and environmental protection zones. In addition, much of the project would occur over existing roads and previously disturbed sites. The proposed project would not change the nature of land use at the project site or surrounding training facilities.

Road construction would not have any permanent effect on public access to, or commercial or recreational use of the coastal zone. MCB Camp Pendleton as a whole is restricted from public access. The project area is not authorized for commercial use. Beach Club Road provides important recreational access to the beach and surf spots (i.e., Lower Trestles, Churches, and San Onofre Reef) for military personnel, their dependents, and authorized San Onofre Surf Club members. In addition, Marines use the road for running. San Onofre Beach Club Road is currently closed due to the severe road damage caused by the December 2010 storm events. As discussed in Section 5.2.6, the USMC is proposing repairs to the damaged portions of this road to reopen Beach Club Road.

The Proposed Action construction would enhance vehicle and pedestrian access by widening and resurfacing the roadway and providing safer transit for two-way traffic. The temporary interruption of road access during construction would be coordinated with Base training and operations to avoid scheduling conflict. To minimize the interruption of road and railway traffic, construction would be accomplished in several stages over the course of a year to provide adequate transit. The USMC consulted with the California Coastal Commission (CCC) during the 2010 P-159A EA process to request concurrence with its Coastal Consistency Negative Determination (CCND). The CCC provided a letter to the USMC concurring with the determination that the Proposed Action would not adversely affect coastal resources (refer to Appendix C of the P-159A EA). The SEA Proposed Action contains the same footprint as the previous EA, and focuses on the additional bridge design/construction components described in Chapter 2. None of these elements would affect coastal resources. During the SEA process the USMC consulted with the California Coastal Commission to request concurrence with its CCND. The California Coastal Commission provided a letter to the USMC concurring with the determination that the Proposed Action would not adversely affect coastal resources (refer to Appendix A of this SEA). Therefore, no significant impacts related to land use or recreational access would occur.

Socioeconomics. Construction of this project would not result in the displacement of people or businesses and would not change the economic character or stability of the surroundings. Construction contractors would be drawn from the neighboring communities. Therefore, no significant impacts to socioeconomics would occur under the Proposed Action or No-Action Alternative.

Environmental Justice. Implementation of the Proposed Action or No-Action Alternative would not result in the disproportionate impact to minority populations or low-income populations nor would it result in environmental health risks or safety risks to children.

Aesthetics. Implementation of the Proposed Action would not adversely affect aesthetics or visual resources as the proposed road improvements and bridge replacement system would be consistent with existing land use within MCB Camp Pendleton and the NCTD railway easement. The proposed project would follow approved guidelines in the Base Exterior Architectural Plan and would be

consistent with the existing I-5 and railway overpasses. Due to the small number of potential viewers, and the moderate visual quality of the location, effects to the overall visual quality of the site are low. Implementation of the Proposed Action or No-Action Alternative would not adversely affect the visual setting. Therefore, no significant impacts related to aesthetics would occur under the Proposed Action or No-Action Alternative.

Utilities. Any existing utility lines that may run through the project area would be clearly marked and avoided during construction to preserve uninterrupted service. Utility upgrades would not be required to accommodate the access road improvements or bridge replacement system. Therefore, no significant impacts related to utilities would occur. In addition, no significant impacts to utilities would occur under the No-Action Alternative.

Public Health and Safety. The Proposed Action would be sited in accordance with established land use development guidelines addressing safety, functionality, and environmental protection zones. The project site is not located close to any population centers or public facilities. Access to the project area is restricted to military personnel during training operations, and NCTD personnel within the railway easement area. Implementation of the Proposed Action would comply with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk*, as construction areas would be fenced to prevent access by unauthorized persons, including children. Proposed operation of the access lanes would not pose a risk to public health or safety and no changes to existing safety procedures or guidelines would occur. Therefore, no significant impacts related to public health or safety would occur. In addition, no significant impacts to public health and safety would occur under the No-Action Alternative.

3.1 TOPOGRAPHY, GEOLOGY, AND SOILS

3.1.1 Definition of Resource

Topography describes the surface characteristics of the land such as slope and elevation. The geology of an area includes bedrock materials, mineral deposits, and fossil remains. The primary geologic factors influencing the stability of structures are soil and bedrock depth, stability and seismic properties.

Bedrock refers to consolidated material composed of interlocking crystals (igneous or metamorphic rocks) or sedimentary rocks consisting of particles compacted and cemented together over time (sandstone, shale). Soil refers to unconsolidated earthen materials overlying bedrock (sand, silt, clay). Soil structure, elasticity, strength, shrink-swell potential, liquefaction potential, and erodibility all determine the ability for the ground to support structures and facilities.

3.1.2 Existing Conditions

MCB Camp Pendleton is located within the Peninsular Ranges Geomorphic Province of California, characterized by a series of northwest trending ranges of mountains and hills. Coastal plateaus extend inland a short distance to foothill ranges, beyond which is the higher Peninsular Range.

The project area is located in the fluvial outwash of San Onofre Creek. The region is characterized by deep marine sedimentation followed by regional uplift and subsequent stream and marine erosion.

The United States Department of Agriculture (USDA) classifies soil types according to their locations, physical properties, steepness of slopes on which they occur, and relative compatibility or limitations with regard to particular construction activities and types of land use. The soil types are grouped into associations that are generally found in similar physical settings. Soils directly below the I-5 and railway

overpasses have been disturbed and modified. Imported road fill, gravel, and riprap overlay the native soils. Table 3.1-1 lists the USDA soil types found within the project area (USDA 1973, 2006).

Table 3.1-1. Soil Types within the Project Area

Soil Name	Symbol	Occurrence	Susceptibility to Erosion	Shrink-Swell Behavior
Coastal Beaches	Cr	varies	Severe	Low
Salinas Clay	ScB	2 to 5 percent	Slight	High
Terrace Escarpments	TeF	varies	Severe	High
Riverwash	Rm	Varies	Severe	Low
Visalia Sandy Loam	VaA	0 to 2 percent	Severe	Low

Sources: USDA 1973, 2006.

The predominate soil type in the project area is Riverwash, which consists of sandy, gravelly, or cobbly material generally located in intermittent stream channels. A very small portion of the project site is made of Salinas Clay, Terrace Escarpments, Visalia Sandy Loam, and Coastal Beaches soil types. The Salinas Clay soil type is characterized by well drained and moderately well drained clay loams, which are generally found on flood plains and alluvial fans. The Terrace Escarpments soil type is characterized by steep landscapes occurring between narrow flood plains and adjoining uplands and steep sides of drainages. The Visalia Sandy Loam soil type consists of moderately well drained, very deep sandy loams, which are located on alluvial fans and flood plains. The Coastal Beaches soil type occurs as gravelly and sandy beaches along the Pacific Ocean. The USDA rates the engineering properties of soils. With the exception of the small area of Salinas Clay, the majority of the project site is considered severely susceptible to erosion by water (USDA 1973).

Faulting and Seismicity

The California Division of Mines and Geology classifies faults as active or potentially active, according to the Alquist-Priolo Special Studies Zone Act of 1972 (Hart 1997). The California Division of Mines and Geology defines an active fault as a fault that has exhibited sediment displacement within the Holocene Epoch (the last 11,000 years). A fault that has exhibited sediment displacement during the Pleistocene Epoch (which began about 1.6 million years ago and ended about 11,000 years ago) is defined as potentially active. Earthquake magnitude is described by the Richter scale.

Fault activity causes damage in a variety of ways. Hazards can include landslides, ground shaking, surface displacement and rupture, and the triggering of tsunamis. In general, the type of damage caused at a particular location depends on (a) the proximity to an active fault, (b) the frequency and severity of the earthquake, (c) the potential for surface rupture, (d) the composition of the surface, and (e) topography.

MCB Camp Pendleton is not underlain by any active or potentially active faults, but is located in an active seismic region, characterized primarily by the San Jacinto, Elsinore, and Coronado Bank fault zones in the surrounding region of southern California. These regional faults do not pass within the boundaries of MCB Camp Pendleton; however numerous active faults that could cause ground motion or produce secondary effects are located within 60 miles (97 km) of the base. The project area is not included within an Earthquake Fault Zone as created by the Alquist-Priolo Act (Hart 1997). Figure 3.1-1 shows the locations of regional fault zones.

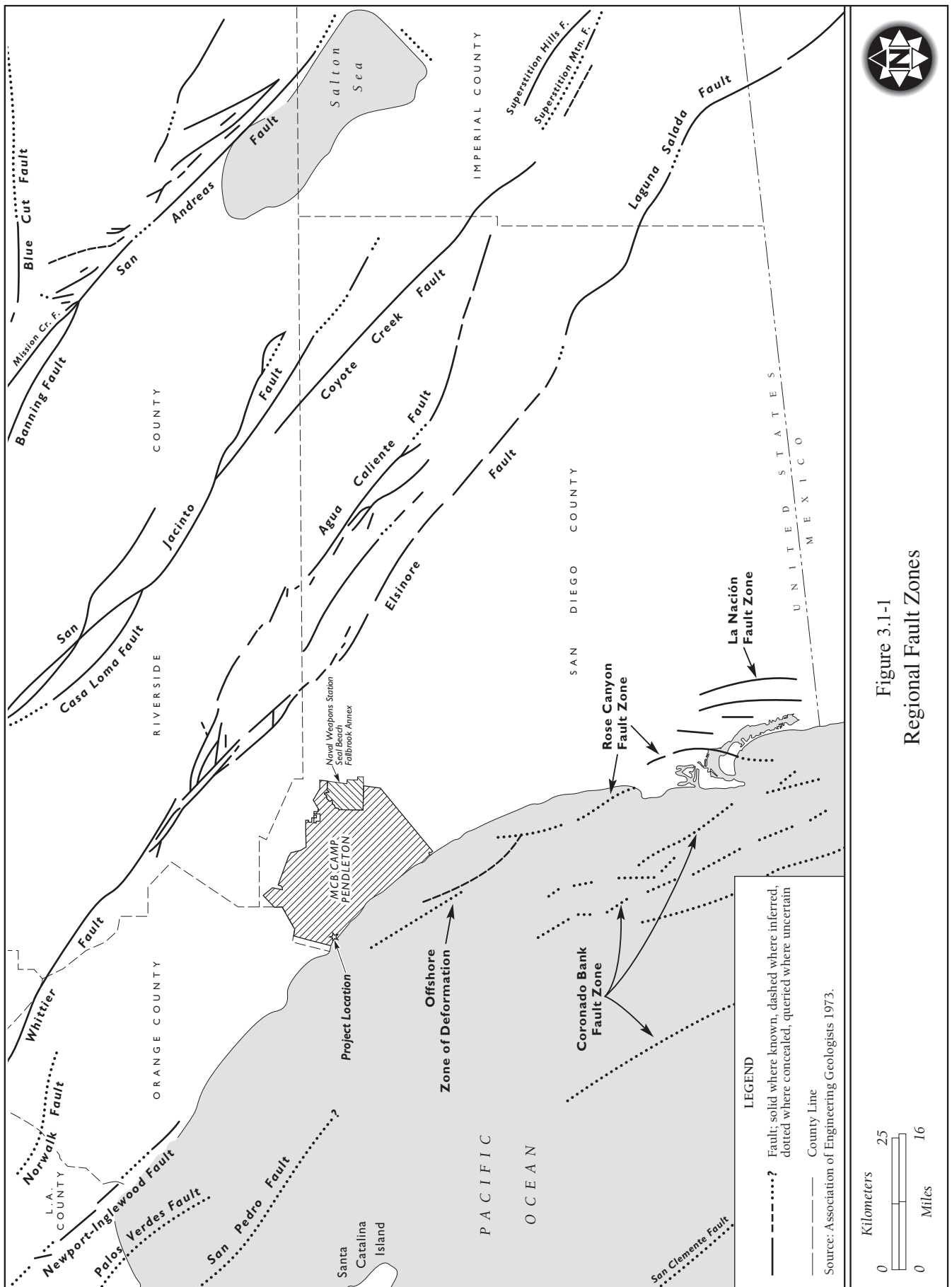


Figure 3.1-1
Regional Fault Zones

Several of the faults and the fault zones in the region surrounding the project area are considered to be active by the California Division of Mines and Geology. Table 3.1-2 lists the active regional faults closest to the project site.

Table 3.1-2. Major Active Faults in the Vicinity of the Project Area

Fault Name	Approximate Distance from Fault to Study Area (in miles)
Offshore Zone of Deformation	5
Whittier-Elsinore Fault	25
Rose Canyon Fault Zone	32
Newport-Inglewood Fault	28

Source: Association of Engineering Geologists 1973.

3.2 HYDROLOGY

3.2.1 Definition of Resource

General hydrology, water supply, water quality, and flooding are discussed in this section. Hydrology is the science that deals with global water, its properties, circulation, and distribution, on and under the surface of the earth and in the atmosphere, from the moment of precipitation until it returns to the atmosphere through evapo-transpiration or is discharged into the ocean. Water supply includes surface and groundwater resources that are potentially available for consumption. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. For the purposes of this analysis, freshwater quality is evaluated with respect to possible releases of hazardous material and erosion-induced sedimentation resulting from the action alternatives. Floodplains are generally located adjacent to rivers and other bodies of water and in low-lying areas near a water source. A 100-year floodplain is an area that is generally, on average, subject to a 1 percent chance of flooding every year, or once every 100 years.

3.2.2 Existing Conditions

3.2.2.1 Surface Water Resources

MCB Camp Pendleton is divided by mountain ranges into seven watersheds: San Mateo, San Onofre, Las Flores, Aliso, San Luis Rey, Horno/Coastal, and Santa Margarita. Water flows southwestward via these streams to discharge in the Pacific Ocean. The project is located in the San Onofre watershed, which encompasses approximately 27,520 acres (11,137 hectares) in the northwestern portion of MCB Camp Pendleton (USMC 2007). The San Onofre watershed is completely contained within MCB Camp Pendleton. The upper portion of the watershed drains coastal hills and portions of the Santa Margarita Mountains. The lower part of the watershed drains an alluvial valley and empties to the Pacific Ocean at Green Beach, where dunes restrict outflow, forming a lagoon and coastal wetlands.

Flow in San Onofre Creek varies widely in response to seasonal rainfall (USMC 2007). During the dry season and times of drought, the majority of San Onofre Creek may be dry from July through October, but has permanent open water in the lower reaches (USMC 2007). Conversely, flow level will rise to flood stage, especially in the lower reaches, in heavy rainfall years. In late December 2010 MCB Camp Pendleton received significant rainfall. On 23 December 2010 the project team initiated a post-storm observation of the project site (TEC 2010). Several areas along the San Onofre Creek bank were

observed to be washed out as a result of this storm event (Figure 3.2-1). In addition, a portion of the beach access road (Beach Club Road) was damaged by the storm event and small portions of the lower west end of the existing mitigation site and of the parking/construction laydown area (approximately 0.05 acre total) were observed to be washed out (Figure 3.2-1) (TEC 2010).

Regarding the damage to Beach Club Road, the project design and construction plans (e.g., placement of a retaining wall along the creek bank) approved in support of the previously prepared Green Beach EA can be implemented as proposed. A hydrologic study of the San Onofre Creek system prepared by Camp Pendleton calculated the 100-year flood condition for San Onofre Creek to be a flow of rate 14,158 cubic feet per second (USMC 2007). The project site is located within the 100-year floodplain mapped for San Onofre Creek (MCB Camp Pendleton 2010b). Surface water from San Onofre Creek is not used as a source of potable water supply (USMC 2007).

San Onofre Creek is the dominant aquatic feature in the project area. San Onofre Creek flows intermittently upstream of the project area, but has permanent open water in the lower reaches. San Onofre Creek parallels the existing alignment of El Camino Real and reaches the Pacific Ocean at Green Beach (refer to Figure 2-1). San Onofre Creek is directly adjacent to the existing roadways through the I-5 and Old Highway 101 overpasses. The stream channel bottom below both the Old Highway 101 overpass and I-5 is unlined, consisting of sandy mud, with layers of sand and road fill material that have been washed down into the creek channel.

The mouth of the Creek is a distinct marsh with associated basins and drainages that function as adjacent wetlands. The coastal lagoon at the San Onofre Creek mouth is identified by MCB Camp Pendleton as an estuarine special management area. The San Onofre Creek channel is a riparian special management area. A drainage swale extends from the coastal estuary to the east towards El Camino Real. The swale is approximately 2 ft (0.6 m) deep and 1 to 3 ft (0.3 to 0.9 m) wide and is hydrologically connected to the main San Onofre Creek estuary.

3.2.2.2 Groundwater

MCB Camp Pendleton has four groundwater basins that correspond to, and are connected with, the four major surface drainage basins (Santa Margarita, San Onofre, Las Flores, and San Mateo). Most of the groundwater at MCB Camp Pendleton is contained in the alluvial materials and shallow sedimentary rock units of these four major groundwater basins. The aquifers are generally unconfined, due to the interfingering and discontinuous nature of these reservoir materials. The regional flow of groundwater is suspected to be toward the southwest, from the slopes of the mountains toward the ocean. Overall, localized water tables can be expected at similar elevations to those of observed nearby flowing streams, or below the elevations of dry stream channels.

The alluvial valleys formed by the downstream portion of all four major creeks, including San Onofre Creek, contain the primary source of water for MCB Camp Pendleton. The project site is located within the San Onofre groundwater basin. One groundwater well located at San Onofre Creek supplies drinking water for Camp Horno and Camp San Onofre (USMC 2007). The combined safe yield of the San Onofre and San Mateo groundwater basins is estimated at 4,600 acre-feet per year (USMC 2007). The water supply well in the San Onofre basin is located upstream and outside of the project area.



Figure 3.2-1
Green Beach Locations Observed to be
Washed Out Following December 2010 Storm Events



3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of Resource

This section describes native and naturalized plants and animals and their habitats that are known or expected to occur in areas affected by the action alternatives. For the purpose of this SEA, biological resources are divided into three major categories: plant communities and aquatic habitats, the latter including CWA Section 404 jurisdictional waters of the U.S.; wildlife, including migratory birds; and special-status species, including federally listed or proposed species, and other special concern species. Throughout this section and Section 4.3, the term “project area” is used to describe the general vicinity of the project, encompassing the development footprint, heavy equipment operating areas, staging areas, and areas of incidental impact. Additional vehicle access and staging would be confined to existing roads.

3.3.2 Existing Conditions

3.3.2.1 Plant Communities and Aquatic Habitats

Plant Communities

Plant communities in the project area (Figure 3.3-1) were delineated and classified based on fieldwork conducted by TEC Inc. (TEC), during July and August 2007 (TEC 2007) for P-159A. The project area for this SEA is described in Section 2.2 and includes the railway bridge replacement within the larger P-159A footprint. The 2007 survey area included the entire road segment and bridge segment proposed for repair and refurbishment, construction staging areas, plus an approximate 50-ft (15-m) buffer extending from the P-159A project area into adjacent habitat. Plant communities within the proposed project area are presented in Figure 3.3-1.

Each distinct stand of vegetation in the project area was characterized in terms of habitat and disturbance, vegetation structure, and dominant plant species. The field results were compared with previous plant community mapping on the installation (MCB Camp Pendleton 2010b; USMC 2007). Plant communities were classified using the Holland (1986) system as adapted to San Diego County (Oberbauer et al. 2008), modified for consistency with local circumstances, and mapped digitally onto aerial photographs at a scale of 1:2400 (1 inch equals 200 ft). The following plant communities are recognized, sometimes in combination, within the project area and are presented in Figure 3.3-1:

Coastal Sage Scrub (Diegan) (CSS) occurs on dry slopes and is typically dominated by California sagebrush (*Artemisia californica*) and other soft-woody shrubs. Shrub cover varies considerably and grassland understory is typically present. In the project area, CSS is dominated by coyote brush (*Baccharis pilularis*) and coast goldenbush (*Isocoma menziesii*). Some California sagebrush, elderberry (*Sambucus mexicana*) and mulefat (*Baccharis salicifolia*) are also present, with Brewer's saltbush (*Atriplex lentiformis* ssp. *breweri*) found in areas closer to the coast. Within and in the vicinity of the project area, this community is disturbed and contains exotic fennel (*Foeniculum vulgare*), myoporum (*Myoporum laetum*), iceplant (*Carpobrotus edulis*), and tree tobacco (*Nicotiana glauca*). The majority of the area mapped as disturbed (D)-CSS within the proposed bridge footprint is an open sandy area under the existing bridge. The proposed retaining wall on the east side of the bridge could impact a small area of D-CSS. D-CSS occurs north and south of the bridge footprint and within the proposed mitigation site.

Disturbed/Ruderal (D) habitat includes areas that are vegetated with mainly exotic weedy or planted species. The disturbed area within the project area is a dirt parking lot which would be used as a staging area.

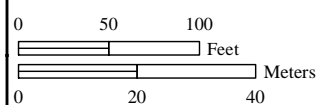
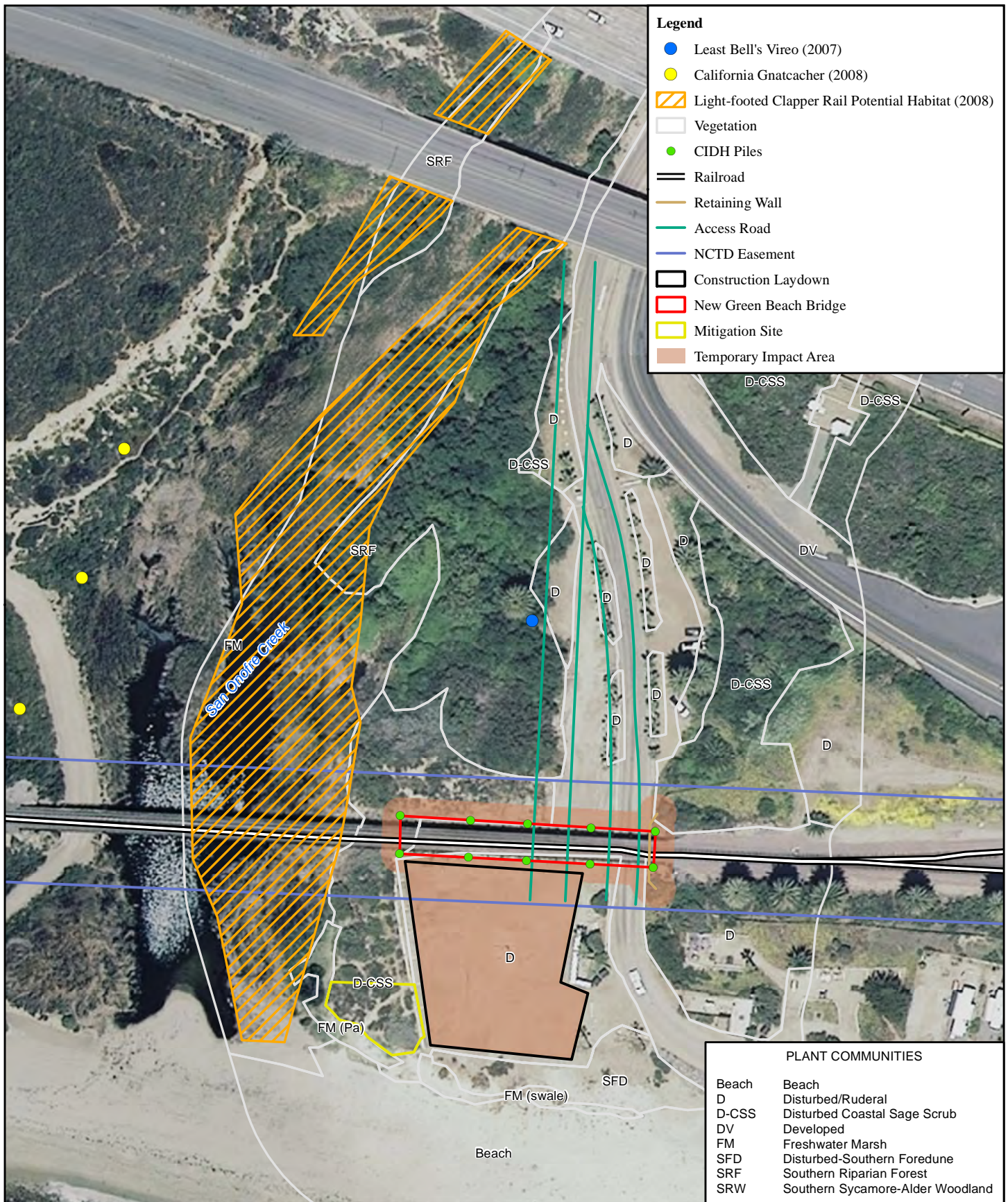


Figure 3.3-1
Biological Resources Within and in the Vicinity of the
Green Beach Bridge Project Area



Developed (DV) areas include graded and paved land and areas that have been constructed upon. The majority of the proposed bridge footprint is developed and includes the existing railway bridge/trestle which is going to be replaced.

Table 3.3-1 lists the acreage of each plant community within the project footprint.

Table 3.3-1. Plant Community Acreages within the Project Footprint

Plant Community	Proposed Action (acres)
Disturbed Coastal Sage Scrub (Diegan)	0.08
Disturbed/Ruderal Habitat	0.49
Developed	0.16
Total	0.73

Aquatic Habitats

Aquatic habitats, including jurisdictional wetlands and waters of the U.S. were evaluated in the P-159A EA (NAVFAC SW 2010a). No additional jurisdictional areas would be impacted from the implementation of the additional project area for the railway bridge replacement. The potential impacts that were evaluated in the P-159A EA have been submitted to the U.S. Army Corps of Engineers and the Regional Water Quality Control Board.

In spring of 2007 a vernal pool reconnaissance survey was conducted at the P-159A project site (NAVFAC SW 2010a; Appendix A). The survey concluded that the project area did not have any basins likely to support vernal pool plants or fairy shrimp. Therefore, focused protocol sampling for the presence of listed fairy shrimp species was not conducted and are not considered further in this SEA.

3.3.2.2 Wildlife

A diverse assemblage of mammals, birds, reptiles, amphibians, fish, and invertebrates occurs within MCB Camp Pendleton. In addition to hundreds of invertebrates, MCB Camp Pendleton has documented the presence of more than 50 mammalian, 30 reptilian, 10 amphibian, 300 avian, and 60 fish species (USMC 2007). Many wildlife species are resident on MCB Camp Pendleton and can be found throughout the year. Other wildlife species, such as migratory birds, visit MCB Camp Pendleton seasonally. A majority (91 percent) of avian species on MCB Camp Pendleton are included on the list of migratory birds (50 CFR 10.13) protected by the MBTA and EO 13186.

The wildlife species likely to occur within or in the vicinity of the project area are the same species which were described in the P-159A EA (refer to NAVFAC SW 2010a). Since the majority of the bridge railway project area is developed, the most likely species to occur in the project area are common species adapted to noise and other disturbance. The majority of bird species that occur on MCB Camp Pendleton are protected by the MBTA. Cliff swallows (*Petrochelidon pyrrhonota*) and black phoebes (*Sayornis nigricans*) likely nest under the railway bridge in the project area.

3.3.2.3 Special Status Species

Federally Listed Species

Habitats at the mouth of San Onofre Creek are the subject of protective management under MCB Camp Pendleton's INRMP (USMC 2007), which incorporates the Riparian Habitat Conservation Plan and Estuarine/Beach Ecosystem Conservation Plan. The riparian habitat protection zone extends from the mouth of the creek upstream to approximately I-5; hence, the two zones overlap in the project area.

Marine Corps training activities in these zones are restricted to existing roads and existing creek crossings during the breeding seasons of listed species that occur in these habitats.

Eighteen federally threatened, endangered, or candidate terrestrial and aquatic species are found on, transit through, or have the potential to occur on MCB Camp Pendleton (Table 3.3-2). Descriptions of all threatened and endangered species known or likely to occur on MCB Camp Pendleton are included in the INRMP (USMC 2007).

Based on review of MCB Camp Pendleton's current geographical information system (GIS) information, site conditions, and field surveys conducted in 2008, CAGN, LBVI, SWFL, and TWG are known to occur in the vicinity of the project area (MCB Camp Pendleton 2010b).

Light-footed clapper rail (*Rallus longirostris levipes*) (LFCR) was not detected during 2008 avian surveys. Both sora and Virginia rails (*Porzana carolina* and *Rallus limicola*, respectively) were detected during this survey and habitat conditions seemed suitable for the LFCR (e.g., good cover, shallow foraging areas, etc.). The apparent absence of the LFCR may be due to the small area of suitable habitat (approximately 3.4 acres [1.4 hectares]) and/or the distance between this site and the nearest known occurrence of LFCR, which is at Santa Margarita Lagoon, approximately 18 miles (25 km) to the south (NAVFAC SW 2010a; Appendix A). From 2002 to 2007 one to two pairs of LFCR were observed in the Santa Margarita Lagoon. In 2008 an unpaired bird was observed and in 2009 no survey was conducted. To the north, the nearest site occupied by LFCR is Upper Newport Bay, approximately 30 miles (48 km) away (Zemba et al. 2009). Although potential LFCR habitat is present, the species evidently does not occur in the area (MCB Camp Pendleton 2010b). Thus LFCR will not be discussed further.

The arroyo toad is found in the San Onofre drainage basin upstream of the project site. However, no habitat for the arroyo toad is found in or in the vicinity of the project area and this species is not discussed further.

No federally listed plant species were detected during a series of vegetation surveys of the project site in 2008 (TEC 2008) and no previous records indicate rare plants in the project area (MCB Camp Pendleton 2010b).

**Table 3.3-2. Federally Listed or Candidate Plant and Animal Species
Known to Occur or Potentially Occurring on MCB Camp Pendleton**

Common Name	Scientific Name	Federal Status	Habitat	Occurrence in Project Area
<i>Plants</i>				
San Diego button-celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	Endangered	Vernal pools	Not known or likely to occur due to lack of habitat
spreading navarretia	<i>Navarretia fossalis</i>	Threatened	Vernal pools	Not known or likely to occur due to lack of habitat
thread-leaved brodiaea	<i>Brodiaea filifolia</i>	Threatened	Grasslands	Not known or likely to occur due to lack of habitat
Brand's phacelia	<i>Phacelia stellaris</i>	Candidate	Coastal dunes	Not known or likely to occur due to lack of habitat
<i>Invertebrates</i>				
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	Endangered	Vernal pools	Not known or likely to occur due to lack of habitat
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	Endangered	Vernal pools	Not known or likely to occur due to lack of habitat
<i>Fish</i>				
southern California steelhead	<i>Oncorhynchus mykiss</i>	Endangered	Rivers and major streams	Not known or likely to occur in San Onofre Lagoon because it does not have suitable staging or rearing habitat due to the lack of prey availability, but steelhead could use it as a transit corridor.
tidewater goby	<i>Eucyclogobius newberryi</i>	Endangered	Estuaries/coastal brackish lagoons	Occurs in San Onofre Lagoon
<i>Amphibians</i>				
arroyo toad	<i>Anaxyrus californicus</i>	Endangered	Rivers, major streams, surrounding uplands	Not known or likely to occur due to lack of habitat.
<i>Birds</i>				
California least tern	<i>Sternula antillarum browni</i>	Endangered	Sandy beaches and coastal dunes	Possible transient occurrence on beach or foraging in lagoon, but no confirmed nesting at Green Beach and not known or likely in project area due to lack of habitat
coastal California gnatcatcher	<i>Poliptila californica californica</i>	Threatened	CSS	Occurs in CSS habitats adjacent to project site
least Bell's vireo	<i>Vireo bellii pusillus</i>	Endangered	Riparian	Occurs in riparian habitat along San Onofre Creek
light-footed clapper rail	<i>Rallus longirostris levipes</i>	Endangered	Coastal fresh and salt water marshes	Not known or likely to occur
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Willow dominated riparian	Occurs in riparian habitat along San Onofre Creek
western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Threatened	Sandy beaches	Occurs downstream of project area on beach, but not known or likely in project area due to lack of habitat
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Candidate	Riparian	Not known or likely to occur because of extreme rarity in San Diego County
<i>Mammals</i>				
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	Endangered	Coastal mesas, in sparse grassland with sandy soil	Not known or likely to occur due to lack of habitat
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	Endangered	Sparse CSS & grassland	Not known or likely to occur due to lack of habitat

Note: **Bold** indicates listed species present in or adjacent to the project area and addressed in this SEA.

Coastal California Gnatcatcher (CAGN)

The CAGN is a small gray songbird that is an obligate, permanent resident of coastal sage scrub vegetation. They will make limited use of adjacent habitats outside of the breeding season. The breeding season extends from February 15 through August 31, with peak nesting activities occurring from mid-March through May, as identified by the USFWS Carlsbad office (2007). CAGN usually begin to molt into breeding plumage in early February. Males select the site for nesting, and nest building begins two to four weeks after the molt. The nest is constructed primarily by the male, and takes between four and eleven days to complete. Eggs are incubated for 12 days, and nestlings fledge at 13 days. Young remain with their parents for three to five weeks after fledging. If there is persistent predation of eggs and young, up to ten nests can be constructed during the breeding season.

The USFWS designated CAGN as threatened in March 1993 (USFWS 1993a). Currently there is no recovery plan for the CAGN. Since the time of listing, MCB Camp Pendleton has developed several conservation management programs and policies to protect the CAGN.

Critical habitat was designated in 2000 (USFWS 2000a), but was remanded for reconsideration based on litigation. The USFWS re-proposed critical habitat on 24 April 2003 (USFWS 2003), which was subsequently revised, resulting in the final designation of critical habitat on 19 December 2007 (USFWS 2007). All areas of MCB Camp Pendleton, including leased lands such as San Onofre State Beach, were excluded from designation based on ongoing conservation measures implemented at the Base. Critical habitat is not designated along the railway and freeway corridors that cross MCB Camp Pendleton (refer to Figure 3.3-1). MCB Camp Pendleton is currently working cooperatively with USFWS to provide conservation and protection for upland habitat throughout MCB Camp Pendleton.

The population of CAGN on MCB Camp Pendleton has expanded greatly with protective management of the species and its habitat under the INRMP (USMC 2007). Surveys in 2006 detected approximately 640 nesting pairs on MCB Camp Pendleton. Under MCB Camp Pendleton's INRMP and Range and Training Regulations, the removal of or damage to CSS is prohibited, and training activities in the vicinity of occupied habitat are required to remain on existing roads during the breeding season.

Surveys for CAGN were conducted at the P-159A project site according to the breeding season protocol approved by the USFWS for jurisdictions not participating in the Natural Communities Conservation Program. A permitted biologist surveyed the area six times at least one week apart between 22 April and 5 June 2008. No CAGN were detected within the project area during this study. However, three pairs of CAGN were observed approximately 325 to 375 ft northwest of the project area, west of San Onofre Lagoon (refer to Figure 3.3-1) (NAVFAC SW 2010a; Appendix A).

Least Bell's Vireo (LBVI)

LBVI is a small migratory songbird. The LBVI arrives at Camp Pendleton as early as mid-March and leaves for its wintering grounds in Baja California in August. The breeding season is from 15 March through 31 August. LBVI primarily inhabits dense willow-dominated riparian habitats with lush understory vegetation. LBVI forage and nest primarily in willows. The decline of LBVI was mainly due to loss of riparian habitat and nest parasitism by cowbirds (USMC 2007).

The USFWS listed the LBVI as an endangered species on 2 May 1986 (USFWS 1986). A draft recovery plan is available for this species (USFWS 1998). Critical habitat for the LBVI was designated in 6 southern California counties on 2 February 1994 (USFWS 1994a). MCB Camp Pendleton was excluded from this designation due to a Memorandum of Understanding with the USFWS in response to the ongoing management of LBVI and riparian habitat on MCB Camp Pendleton.

The riparian vegetation occurring along San Onofre Creek provides suitable habitat for LBVI. Base-wide survey data for LBVI from 2004 to 2009 show that LBVI regularly nests in riparian habitat along San Onofre Creek (Lynn and Kus 2010). LBVI was heard and seen in the area during site visits in 2008. In 2007, a LBVI territory was documented approximately 140 ft (43 m) north of the bridge project area and is within the P-159A project area (refer to Figure 3.3-1) (MCB Camp Pendleton 2010b).

Southwestern Willow Flycatcher (SWFL)

The SWFL is a sparrow-sized neotropical migrant. It arrives at Camp Pendleton for the breeding season the end of April and may be present through the end of August (Howell and Kus 2009). Its breeding range extends from southern California, east to western Texas, north to extreme southern Utah and Nevada, and south to extreme northern Baja California, Mexico. The flycatcher inhabits riparian areas along rivers, streams, and other wetlands. It typically nests in even-aged, structurally homogeneous, dense stands of trees and shrubs approximately 13-23 ft (4-7 m) tall with a high percentage of canopy cover and dense foliage. Nesting flycatchers prefer willow and mulefat thickets and invariably nest near surface water or saturated soil, which increases the production of flying insects, the primary food of the SWFL. Threats to the species are habitat loss, human disturbance, and nest parasitism by cowbirds (USMC 2007).

The SWFL was federally listed as an endangered species by the USFWS on 27 February 1995 (USFWS 1995b). On 22 July 1997, the USFWS designated critical habitat for this species (USFWS 1997). Critical habitat was designated along the Santa Margarita River. The ruling was vacated and remanded in May 2002. A final rule designating critical habitat was issued in 19 October 2005; MCB Camp Pendleton land was exempted from the designation because areas are managed through the INRMP and the Riparian Conservation Plan (USFWS 2005a). A recovery plan is available for this species (USFWS 2002).

The riparian habitat along San Onofre Creek provides suitable habitat for SWFL. However, in 2009 there were only twelve SWFL territories on MCB Camp Pendleton. Eleven of the territories were along the Santa Margarita River and one territory was along San Mateo Creek (Howell and Kus 2009). Survey data compiled in the INRMP show sporadic detections of SWFL along San Onofre Creek (MCB Camp Pendleton 2010b, USMC 2007).

Tidewater Goby (TWG)

The TWG was federally-listed as endangered on 4 February 1994 (USFWS 1994b). A recovery plan has been prepared describing the conservation needs of the species, including the protection of populations in the coastal lagoons of MCB Camp Pendleton (USFWS 2005b). Coastal streams supporting the TWG on MCB Camp Pendleton, including San Onofre Creek from the ocean to just inland of I-5, were previously designated as critical habitat in 2000 (USFWS 2000b). However, in the revised final designation of critical habitat (USFWS 2008a), all streams supporting the TWG on MCB Camp Pendleton, including San Onofre Creek, are recognized as essential but have been exempted from critical habitat designation due to the protection to the species which is provided through the INRMP and the Estuarine Conservation Plan and Riparian/Estuarine BO (USFWS 2008a).

TWGs are small (usually less than 2 inches [5 centimeters long]) fish which live and reproduce in coastal lagoons. TWG are benthic (living on the bottom substrate) and inhabit shallow waters (less than 3 ft [0.9 m] deep) that are slow moving to still but not stagnant (Irwin and Soltz 1984). The coastal lagoons where these fish reside are typically closed off from the ocean by sand bars during summer. The substrate is generally sand, mud, and gravel with abundant emergent and submerged vegetation (Moyle 1976). In

addition to living in coastal lagoons, these fish have been documented to move upstream, in one case more than five miles (Irwin and Soltz 1984). TWG regularly range up into freshwater in summer and fall as sub-adults and adults, although there is little evidence of reproduction in upper areas. Threats to this species include loss of estuarine habitat, degradation in water quality, and predation by invasive fishes.

Unlike other goby species in California, the TWG does not exhibit a marine life history phase (Swift et al. 1989). This limits the frequency of genetic exchange among populations and lowers the potential for recolonization of a habitat once a population has been lost. While rare, recolonization has been documented to occur at distances up to 12 miles (20 km) from a source population (Lafferty et al. 1996). Flood events may function as agents of dispersal by washing gobies out of lagoons into coastal current patterns (Lafferty et al. 1999).

Spawning in southern California takes place primarily from late April to July, when males dig a vertical burrow approximately 4 to 8 inches (10 to 20 centimeters) into clean coarse sand for nesting. The eggs are attached to the walls of the burrow by the female and are guarded by the male until they hatch in 9 to 10 days. Larval gobies inhabit the water column and seek shelter near vegetation for a short time before adopting a benthic life style as adults (Swift et al. 1989).

This species formerly inhabited lower stream reaches and coastal lagoons from Del Norte County to San Diego County (Lee et al. 1980). Of the 13 historic sites in Orange and San Diego Counties, only 8 populations of TWG remain; all are within MCB Camp Pendleton (USFWS 2000b). TWG populations at MCB Camp Pendleton fluctuate seasonally. Localized extirpations and recolonization events may occur among lagoons on MCB Camp Pendleton (USMC 2007).

Within southern California, the San Mateo, San Onofre, and Las Flores Creeks are considered by the USFWS the largest and most persistent populations of tidewater gobies in the region, potentially serving as important source populations for dispersal into ephemeral estuaries and streams in the area (USMC 2007). Annual surveys from 1987 to 2006 have detected TWG in San Onofre Creek and lagoon during 16 of the 20 sampling periods (USMC 2007).

The MCB Camp Pendleton Estuary Conservation Plan addresses the TWG (USMC 2007). MCB Camp Pendleton's conservation goal for tidewater gobies is to maintain quality habitat through conservation, silt removal, control of exotic predatory fish species, research, and monitoring.

Other Special Concern Species

Two bird species observed in the project vicinity are listed by the California Department of Fish and Game as species of concern: yellow warbler (*Dendroica petechia*) and yellow-breasted chat (*Icteria virens*).

3.4 CULTURAL RESOURCES

3.4.1 Definition of Resource

The National Historic Preservation Act (NHPA) establishes guidelines for the protection, enhancement, and preservation of any property that possesses significant archaeological, architectural, historical, or cultural characteristics. Section 106 of the NHPA mandates that federal agencies take into account the effect of their undertakings on properties included in or eligible for inclusion in the National Register of Historic Places (NRHP). Section 110 mandates that federal agencies establish a program to locate, inventory, and nominate all their properties that might qualify for inclusion on the NRHP.

3.4.2 Existing Conditions

Within the Green Beach area of potential affect (APE), there is a portion of a prehistoric site, CA-SDI-1074, that is eligible for inclusion on the NRHP. Previous research conducted at CA-SDI-1074 indicates that this site may represent the Luiseño/Juaneño ethnohistoric village of *Hechmai* and may contain sensitive archaeological remains. Also in the APE are two historic structures: a wooden trestle railway bridge, and a concrete overpass constructed for Highway 101 (formerly Old Highway 101), which were evaluated for historical significance. To comply with the requirements of Section 106 of the National Historic Preservation Act of 1966 (NHPA), ASM Affiliates, Inc. (ASM) conducted Phase II test excavations in association with SDI-1074, and historic evaluation of the railway trestle and the Highway 101 overpass.

As part of this SEA, ASM Affiliates prepared a Supplemental Historic Property Evaluation for the project footprint (ASM 2011). Based on this evaluation, the new design footprint falls within the studies previously conducted in 2008; therefore, the previous studies and recent information discussed herein would not change. The APE for the Proposed Action includes the entire construction footprint for the proposed bridge construction and access road improvements.

3.4.2.1 Previous Studies

Over 85 years of archaeological investigations along the southern California coast have yielded a long sequence of prehistoric occupation (Moratto 1984). This occupation is well documented both north and south of MCB Camp Pendleton, and extends from the early Holocene into the ethnohistoric period (e.g., Hines and Rivers 1991; Meighan 1954; True 1958; Vanderpot et al. 1993; Warren 1964). Concerning MCB Camp Pendleton, there was little systematic research until the 1960s. As of June 2005, around 600 sites, spanning prehistoric, ethnohistoric and historic time periods have been documented within Camp Pendleton (ASM 2008).

There is one prehistoric site on the edge of the project APE, SDI-1074. Based on archeological research on the site, Singer et al. (1993) and Byrd (1996) recommended the site as eligible for the NRHP, and the CASHPO has concurred with the recommendation.

The project APE contains two historic resources: the timber trestle San Onofre Railway Trestle Bridge constructed in 1926; and the reinforced concrete San Onofre Creek Highway Bridge along U.S. Highway 101, constructed in 1925 and enlarged in 1937. Records searches indicate no historical significance evaluation exists for either structure (ASM 2008).

The timber trestle and steel girder railway bridge does not appear to have been previously evaluated. Several bridges along the NCTD Coaster route have been evaluated but none were found eligible for listing in the NRHP (ASM 2008).

The San Onofre Creek Bridge on Highway 101 was previously recorded during a survey of San Mateo and Christianitos Valleys by LSA Associates, Inc. in 2005. At that time, it was given the Primary Record Number P-37-026825. It appears that the bridge was never formally evaluated for eligibility to the NRHP (ASM 2008).

3.4.2.2 Recent Studies

The Green Beach project area was surveyed by ASM Affiliates in August of 2007 and the evaluation results were finalized in December of 2008 (ASM 2008). The objective of this survey was to perform Phase II test excavations at portions of SDI-1074 within the proposed project APE, and to historically

evaluate the wooden trestle railway bridge and concrete highway bridge to determine the potential eligibility of these properties for inclusion on the NRHP.

SDI-1074

The current testing methods involved excavation of shovel test pits, control units, and backhoe trenches to help define site boundaries and the nature of the archaeological deposits within the proposed construction area. The testing program uncovered disturbed portions of SDI-1074 within the project area, possibly displaced from the adjacent bluff.

Based on the archaeological testing results, SDI-1074 does not appear to extend into the Green Beach portion of the project area. Subsurface profiles from 32 shovel test pits (STPs) and two backhoe trenches demonstrate extensive fill material overlaying sterile beach sand. The limited amount of shell recovered from this portion of the project area probably represents a combination of materials derived from SDI-1074 and naturally occurring shell material from the nearby beach environment. Therefore, it is unlikely that proposed construction activities would encounter intact archaeological deposits in this portion of the project area, including those associated with SDI-1074.

Testing did reveal redeposited midden-like soil, presumably from SDI-1074, that extends into the San Onofre Nuclear Generating Station (SONGS) portion of the project area along the eastern edge of El Camino Real. All of the identified deposits were highly disturbed and in secondary contexts. The “site-like” elements within the project area lack integrity of condition and probably location, and the limited amount of cultural material contained within is unlikely to provide additional information important to prehistory. Hence, even if a small portion of SDI-1074 does extend into the P-159A project area, it does not appear to represent a contributing element to this significant site. However, SDI-1074 is the potential location of the ethnohistoric village of *Hechmai*, which is partially supported by previous work that has identified significant archaeological deposits there. Hence, it is possible that isolated materials of cultural sensitivity and/or archaeological significance may exist within secondary contexts in this portion of the project area. Additionally, similar displaced resources associated with SDI-1074 could exist below the pavement in the project area (El Camino Real and Beach Club Road) and/or within fill and alluvial deposits throughout the proposed project.

Evaluation for NRHP Eligibility

ASM evaluated both the timber trestle railway bridge and the concrete highway bridge within the project APE for NRHP eligibility. Bridges are usually evaluated under two NRHP criteria: Criterion A for their association with important events and broad historical patterns, particularly for their role in the development of transportation infrastructure, and Criterion C for their significance in the field of engineering and architectural design and innovation. Bridges are typically not found eligible under Criterion B for their association with significant people, as standard designs were generally used and the architect is often unidentified. Criterion D is generally not applicable to engineering structures as they are unlikely to provide important information relating to construction methods or materials that are not available from design drawings and other sources. For these reasons, the San Onofre Railway Bridge and the San Onofre Creek, Highway 101 Bridge were evaluated under criteria A and C.

San Onofre Railway Trestle Bridge

San Onofre Railway Bridge is a wooden trestle and steel plate girder bridge. The wooden trestle was constructed in 1926 and it likely replaced an earlier wooden trestle in the same or in an adjacent location. The adjacent section of Highway 101 was re-aligned in 1925 and it is possible that the railway tracks

were also realigned at that time. The steel plate girder was constructed over San Onofre Creek in 1982. This replacement was likely necessary given deterioration of the wooden piles due to water exposure.

The San Onofre Railway Bridge is not associated with any significant historical event or trend. It was not part of the original infrastructure of the Santa Fe Surf Line, constructed in 1888. It was constructed in 1926 at a time when the Santa Fe Railway was experiencing a boom in both passenger use and transportation of freight. In response to this boom, the railway invested in new and faster trains and in upgrading infrastructure. The bridge is not directly associated with this boom in railway travel, nor did it play a significant role in the boom. Its construction was most likely associated with a necessary replacement of the earlier wooden trestle. The San Onofre Railway Bridge is therefore not recommended as eligible under Criterion A (ASM 2008).

San Onofre Railway Bridge is representative of the common timber trestle bridges used by the Santa Fe and other railway companies across the United States during the nineteenth and twentieth centuries. For bridges of this type, the number and length of bents and pilings varies to accommodate the topography of the terrain that is being traversed; however, the technology and method of construction are in essence the same (ASM 2008). In general, railway bridges were designed to minimize cost and effort in construction. They were regularly modified and replaced as needed to maintain service and public safety. Typically they did not incorporate design or engineering innovations, nor did their designers seek to enhance their aesthetic qualities.

ASM analyzed a copy of the Santa Fe railway's standards for bridge and track design from 1966 for this evaluation. Based on a study of this document and a review of published literature on timber trestle bridges, the San Onofre Railway Trestle Bridge is a common bridge type utilized by the Santa Fe Railway regionally and is not unique or exceptional in any way. Therefore, it is not recommended as eligible under Criterion C.

The San Onofre Railway Trestle Bridge does not meet the criteria for listing in the NRHP and thus is recommended as not eligible for listing in the NRHP (ASM 2008) under the regulations pertaining to Section 106 of NHPA.

San Onofre Creek/Highway 101 Bridge

San Onofre Creek Bridge on U.S. Highway 101 is a reinforced concrete girder constructed in 1925. It was one of six bridges constructed along this stretch of Route 2/Highway 101 during the 1920s. Highway 101 was one of the first designated highways resulting from the passing of the Federal Aid Act in 1925. The construction of this bridge was part of a program under the California Highway Commission to re-align the section of Highway 101 between San Onofre and San Mateo creeks to eliminate dangerous curves in the road. The Commission used revenue from a gasoline tax introduced in 1923 to fund the road re-alignment and bridge construction. A total of six bridges were constructed under the program, five of them reinforced concrete bridges and one steel bridge over the San Luis Rey River. A second parallel bridge was constructed just west of the 1925 bridge in 1937. This bridge was constructed as part of a highway widening project necessitated by increased traffic between Los Angeles and San Diego. The second bridge is considered an extension of the 1925 bridge rather than a separate bridge as the two bridges support an undivided highway.

The San Onofre Creek Bridge was constructed as part of a general trend to improve transportation infrastructure in California at a time when the economy was booming and the population growing. This bridge was just one component in this building program and is not representative or emblematic of the trend. The construction of the bridge did not take place as a result of the passing of the Federal Highway

Act of 1925, but was funded by an earlier gasoline tax and was likely planned for some time. Given that this bridge is not directly associated with a significant event or historical trend, the San Onofre Creek Bridge on Highway 101 is recommended as not eligible to the NRHP under Criterion A.

Reinforced concrete girder bridges were the standard highway bridge type in California in the 1920s. The materials utilized and construction methods were also standard. The only architectural detailings employed on the bridge were the round-arched balustrade railings. These were pre-formed and transported to the bridge in sections. They are also of standard design for the time. The span of this bridge, at 300 ft is not exceptional and neither is its height. It is significant that the local newspapers reported on the bridge construction and road improvement project, but expressed no interest in the architectural features of the standard concrete bridges. In contrast, the local newspaper praised the new San Luis Rey Bridge for its architecture, calling it “one of the handsomest architectural structures of which the county can boast.” Notwithstanding the hyperbole evident in this statement, it is clear that the reinforced concrete bridges were considered relatively minor structures lacking in architectural distinction. The standard design and modest scale of this bridge identify this as a minor highway structure. The San Onofre Creek Bridge is therefore recommended as not eligible to the NRHP under Criterion C.

The San Onofre Creek Bridge does not to meet the criteria for listing in the NRHP and thus is recommended as not eligible for listing in the NRHP (ASM 2008) under the regulations pertaining to Section 106 of NHPA.

3.5 AIR QUALITY

3.5.1 Definition of Resource

The concentration of pollutants (typically expressed in units of parts per million (ppm) or micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) in the atmosphere generally describe air quality for a given location. One aspect of significance is a pollutant’s local concentration in comparison to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards, established by the USEPA, are termed the National Ambient Air Quality Standards (NAAQS). The NAAQS represent maximum acceptable concentrations for pollutants of concern. State standards, established by the California Air Resources Board (CARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are equal to or more stringent than the NAAQS and include pollutants for which national standards do not exist (CARB 2011a). Figure 3.5-1 presents the applicable NAAQS and CAAQS for the project area.

The main pollutants of concern considered in this air quality analysis include volatile organic compounds (VOCs), ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter less than or equal to 10 microns in diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in diameter ($\text{PM}_{2.5}$). Although VOCs and NO_x (other than nitrogen dioxide) have no established ambient standards, they are important as precursors to O_3 formation.

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS ⁽¹⁾	NATIONAL STANDARDS ⁽²⁾	
			Primary	Secondary
Ozone (O ₃)	8 Hour	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	Same as Primary Standards
	1 Hour	0.09 ppm (180 µg/m ³)	•	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	•
	1 Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary Standard
	1 Hour	0.18 ppm (339 µg/m ³)	0.100 ppm	•
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	•	0.030 ppm (80 µg/m ³)	•
	24 Hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)	•
	3 Hour	•	•	0.5 ppm (1300 µg/m ³)
	1 Hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)	•
Respirable Particulate Matter ≤10 Microns in Diameter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	•	Same as Primary Standards
	24 Hour	50 µg/m ³	150 µg/m ³	
Respirable Particulate Matter ≤2.5 Microns in Diameter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	15.0 µg/m ³	Same as Primary Standards
	24 Hour	No Separate Standard	35 µg/m ³	
Sulfates	24 Hour	25 g/m ³	•	•
Lead (Pb)	30 Day Average	1.5 µg/m ³	•	•
	Calendar Quarter	•	1.5 µg/m ³	Same as Primary Standard
	Rolling 3-Month Average	•	0.15 µg/m ³	
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 µg/m ³)	•	•
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 µg/m ³)	•	•
Visibility Reducing Particles	8 Hour (10:00 A.M. to 6:00 P.M.)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent. Measurement in accordance with California Air Resources Board (CARB) Method V.	•	•

ppm – parts per million µg/m³ – micrograms per cubic meter mg/m³ – milligrams per cubic meter • – no standard established

(1) CO, SO₂ (1- and 24-hour), NO₂, O₃, PM₁₀, and visibility reducing particles standards are not to be exceeded.

All other California Standards are not to be equaled or exceeded.

(2) Not to be exceeded more than once a year except for annual standards.

Source: CARB 2011a.

Figure 3.5-1
California and National Ambient Air Quality Standards

Identifying the region of influence (ROI) for air quality requires knowledge of the types of pollutants, emission rates, topography, and meteorological conditions associated with a Proposed Action. The ROI for inert pollutants (pollutants other than O₃ and its precursors) is generally limited to a few miles downwind from a source. The ROI for photochemical pollutants, such as O₃, can extend much farther downwind than for inert pollutants. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly VOCs and NO_x. In the presence of solar radiation, the maximum effect of VOCs and NO_x emissions on O₃ levels usually occurs several hours following emission and several miles from the source(s). Therefore, the ROI for air quality analysis is the entire San Diego Air Basin (SDAB), which encompasses all of San Diego County.

3.5.2 Regulatory Setting

Under the Federal Clean Air Act (CAA), as amended, states are responsible for enforcing the established air quality regulations. The CARB enforces air pollution regulations and sets guidelines, as contained in the California State Implementation Plan (SIP), to attain and maintain the NAAQS and CAAQS within the state of California. The CAA Amendments of 1990 established new federal nonattainment classifications, new emission control requirements, and new compliance dates for nonattainment areas.

The severity of the nonattainment classification drives the associated requirements and compliance dates. The following section provides a summary of the federal, state, and local air quality rules and regulations that apply to the Proposed Action.

3.5.2.1 Federal Requirements

Section 176(c) of the CAA, as amended, requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. The USEPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year) vary from pollutant to pollutant and are also subject to the severity of the nonattainment status. For those air pollutants in the SDAB which are in attainment of the NAAQA (SO_x, PM₁₀, and PM_{2.5}), the general conformity requirements and thresholds do not apply. The applicable *de minimis* levels for the project area are listed in Table 3.5-1.

Table 3.5-1. Applicable Criteria Pollutant *de minimis* Levels (tons/year)

VOCs ¹	NO _x ¹	CO ²	SO _x ²	PM ₁₀ ^{2,3}	PM _{2.5} ^{2,3}
100	100	100	NA	NA	NA

Notes: ¹ SDAB 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 SDAB is considered a maintenance area for the federal CO standard and in attainment of the federal SO_x, PM₁₀ and PM_{2.5} standards.

³ SDAB is in nonattainment of the state PM₁₀ and PM_{2.5} standards.

NA = *de minimis* thresholds are not applicable since the SDAB is in attainment of the federal SO_x, PM₁₀ and PM_{2.5} standards.

Sources: CARB 2011b; USEPA 2011.

The USEPA conformity rule establishes a process that is intended to demonstrate that a proposed federal action would not: 1) cause or contribute to new violations of federal air quality standards; 2) increase the frequency or severity of existing violations of federal air quality standards; and 3) delay the timely

attainment of federal air quality standards. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. However, if the increase in emissions for a nonattainment pollutant exceeds *de minimis* levels, a formal conformity determination process must be implemented. For the purposes of this air quality analysis, project emissions would be potentially significant if they exceed federal *de minimis* levels. If emissions exceed their respective *de minimis* levels, further analysis of the emissions and their consequences would be performed to assess whether there is a likelihood of a significant impact to air quality.

3.5.2.2 State Requirements

The California CAA of 1988, as amended in 1992, outlines a program to attain the CAAQS for O₃, NO₂, SO₂, particulate matter, and CO by the earliest practical date. As shown in Figure 3-5, the CAAQS are more stringent than the NAAQS. CARB delegates the authority to regulate stationary source emissions to local air quality management districts. The CARB requires these agencies to develop their own strategies for achieving compliance with the NAAQS and CAAQS, but maintains regulatory authority over these strategies, as well as all mobile source emissions throughout the state. The San Diego County Air Pollution Control District (SDCAPCD) is the local air quality management district responsible for enforcement of air quality regulations in the project area.

3.5.2.3 Local Regulations

The SDCAPCD is responsible for regulating stationary sources of air emissions in the SDAB. The SDCAPCD Rules and Regulations (SDCAPCD 2011) establish emission limitations and control requirements for stationary sources, based on their source type and magnitude. In addition, SDCAPCD Conformity Rule 1501 provides general conformity guidance to ensure that Federal actions are consistent with the efforts of the SDCAPCD to achieve its NAAQS attainment goals.

The SDCAPCD and the San Diego Association of Governments are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County Regional Air Quality Strategy (RAQS) was initially adopted in 1991, and is updated on a triennial basis. This plan includes all feasible control measures that can be implemented for the reduction of O₃ precursor emissions. To be consistent with the RAQS, a project must conform to emission growth factors outlined in this plan. Control measures for stationary sources proposed in the RAQS and adopted by the SDCAPCD are incorporated into the SDCAPCD Rules and Regulations.

The SDCAPCD has also developed the air basin's input to the SIP. The SIP includes the SDCAPCD's plans and control measures for attaining the O₃ NAAQS. The SIP is also updated on a triennial basis. The CARB adopted its 2007 State Strategy for California's 2007 State Implementation Plan on September 27, 2007. As part of that State Strategy, the SDCAPCD developed its *Eight-Hour Ozone Attainment Plan for San Diego County*, which provides plans for attaining and maintaining the 8-hour NAAQS for O₃ (SDCAPCD 2007).

Air Quality Permitting Requirements

Air quality permits are required for activities or equipment that emit air contaminants. The SDCAPCD requires air permits before construction or installation and again before any operational activities begin. An "Authority to Construct" permit is used to authorize construction or installation activities. A "Permit to Operate" is used to authorize operation of specific equipment. All necessary construction or operationally-related permits must be authorized by the SDCAPCD before project implementation occurs.

3.5.3 Existing Conditions

3.5.3.1 Climate and Meteorology

The climate of the project region is classified as Mediterranean, characterized by dry summers and wet winters. The major influences on the regional climate are the Eastern Pacific high-pressure system, topography, and the moderating effects of the Pacific Ocean.

The Eastern Pacific High is a persistent anticyclone that attains its greatest strength and most northerly position during summer, when positioned west of northern California. In this position, the High effectively shelters southern California from the effects of polar storm systems. As winter approaches, the Eastern Pacific High weakens and shifts to the south, allowing polar storm systems to pass through the region. Subsiding air associated with the High warms the upper levels of the atmosphere and produces an elevated temperature inversion (temperature increases with height) along the west coast. The base of this temperature inversion is generally from 1,000 to 3,000 ft (305 to 914 m) above mean sea level during the summer. The subsidence inversion acts like a lid on the lower atmosphere and traps air pollutants near the surface of the earth by limiting vertical dispersion. Mountain ranges in eastern San Diego County constrain the horizontal movement of air and inhibit the ventilation of air pollutants out of the region. These two factors, combined with the emission sources from over three million people, help to create the high pollutant conditions sometimes experienced in San Diego County.

Marine air trapped below the base of the subsidence inversion and over the relatively cool Pacific Ocean often results in fog and stratus clouds during warmer months of the year. Marine stratus usually forms offshore and moves into the coastal plains and valleys during the evening hour. When the land heats up the following morning, the clouds burn off to the immediate coastline and reform the following evening.

Concurrent with the presence of the Eastern Pacific High, a thermal low-pressure system often persists in the interior desert region. The resulting pressure gradient between these two systems produces a southwest to west onshore gradient at MCB Camp Pendleton for most of the year. Sea breezes usually occur during the daytime and disperse air pollutants toward the interior regions. During the evening hours and colder months of the year, the gradient reverses and land breezes blow offshore.

During the colder months, the Eastern Pacific High can combine with high pressure over the continent to produce extended periods of light winds and low-level inversion conditions in the region. These atmospheric conditions can create an environment susceptible to adverse air quality. Excessive build-up of high pressure over the continent can produce a “Santa Ana” condition, characterized by warm, dry, northeast winds. Santa Ana winds help to ventilate the air basin of locally generated emissions. However, Santa Ana conditions can also transport air pollutants from the Los Angeles metropolitan area into the project region. When stagnant atmospheric conditions occur during a weak Santa Ana, local emissions combined with pollutants transported from the Los Angeles area can lead to significant O₃ impacts in the region.

3.5.3.2 Regional and Local Air Pollutant Sources

An emission rate represents the mass of a pollutant released into the atmosphere by a given source over a specified period of time. Emission rates can vary considerably depending on type of source, time of day, and schedule of operation. The SDCAPCD periodically updates emissions for the entire SDAB for purposes of forecasting future emissions, analyzing emission control measures, and for use in regional air quality modeling. The largest regional sources of air emissions are on-road vehicles. The 2010 inventory estimated that on-road vehicles emitted 30 percent of the VOCs, 57 percent of the NO_x, and 61 percent of the CO emissions within the SDAB (CARB 2011c). Another large source of VOCs is the use of surface

coatings and solvents. Combustion sources produce both primary fine particulate matter and fine particulate precursor pollutants, such as NO_x, which react in the atmosphere to produce secondary fine particulates. Coarser particles mainly occur from soil-disturbing activities, such as construction, mining, agriculture, and vehicular road dust.

3.5.3.3 Baseline Air Quality

Representative air quality data for MCB Camp Pendleton for the period 2007-2009 are shown in Table 3.5-2. The USEPA designates all areas of the U.S. as having air quality better than or equal to (attainment) or worse than (nonattainment) the NAAQS. The criteria for nonattainment designation vary by pollutant. An area is in nonattainment for O₃ if its NAAQS has been exceeded more than three discontinuous times in three years and an area is generally in nonattainment for any other pollutant if its NAAQS have been exceeded more than once per year. Former nonattainment areas that have attained the NAAQS are designated as maintenance areas. The SDAB is in basic nonattainment for the federal O₃ standard, is considered a maintenance area for the CO standard, and is in attainment of the federal NO_x, SO_x, PM₁₀ and PM_{2.5} standards. The SDAB is in nonattainment of the state O₃, PM₁₀ and PM_{2.5} standards (CARB 2011b; USEPA 2011).

Ozone concentrations are generally the highest during the summer months and coincide with the period of maximum insolation. Maximum O₃ concentrations tend to be regionally distributed, since precursor emissions become homogeneously dispersed in the atmosphere. Inert pollutants, such as CO, tend to have the highest concentrations during the colder months of the year, when light winds and nighttime/early morning surface-based temperature inversions inhibit atmospheric dispersion. Maximum inert pollutant concentrations are usually found near an emission source.

3.5.3.4 MCB Camp Pendleton Emissions

Emission sources associated with the existing use of MCB Camp Pendleton include civilian and military personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, small stationary sources, and ongoing construction activities. Emissions associated with the use of the operations access points would be confined to vehicular emissions from tactical vehicles utilizing the transit routes between the shoreline and beach areas to inland training sites.

Table 3.5-2. Representative Air Quality Data for MCB Camp Pendleton (2007-2009)

Air Quality Indicator	2007	2008	2009
<i>Ozone (O_3)⁽¹⁾</i>			
Peak 8-hour value (ppm)	0.074	0.077	0.077
Days above federal standard (0.075 ppm) ^(2, 7)	0	2	1
Days above state standard (0.070 ppm)	4	3	5
<i>Carbon monoxide (CO)⁽³⁾</i>			
Peak 8-hour value (ppm)	3.01	2.60	2.77
Days above federal standard (9.0 ppm)	0	0	0
Days above state standard (9.0 ppm)	0	0	0
<i>Particulate matter less than or equal to 10 microns in diameter (PM_{10})⁽⁴⁾</i>			
Peak 24-hour value ($\mu\text{g}/\text{m}^3$)	65.0	41.0	50.0
Days above federal standard (150 $\mu\text{g}/\text{m}^3$)	0	0	0
Days above state standard (50 $\mu\text{g}/\text{m}^3$)	1	0	0
<i>Particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$)⁽⁴⁾</i>			
Peak 24-hour value ($\mu\text{g}/\text{m}^3$)	30.6	27.2	25.1
Days above federal/state standard (35 $\mu\text{g}/\text{m}^3$) ⁽⁵⁾	0	0	0
<i>Sulfur Dioxide (SO_2)⁽³⁾</i>			
Peak 24-hour value (ppm)	0.006	0.007	0.006
Days above federal standard (0.14 ppm)	0	0	0
Days above state standard (0.04 ppm)	0	0	0
<i>Nitrogen Dioxide (NO_2)⁽¹⁾</i>			
Peak 1-hour value (ppm)	0.068	0.089	0.068
Days above state standard (0.18 ppm)	0	0	0

Notes: ⁽¹⁾ Data from the Camp Pendleton Monitoring Station.

⁽²⁾ The federal O_3 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 $\mu\text{g}/\text{m}^3$.

⁽⁶⁾ Data from the San Francisco-Arkansas Street Monitoring Station.

⁽⁷⁾ 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.

ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

Source: CARB 2011d.

3.5.3.5 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere by absorbing infrared radiation. Without this natural greenhouse effect, the average surface temperature of the Earth would be about 60°F (15.5°C) colder (U.S. Global Change Research Program 2009). Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce environmental, economic, and social consequences across the globe.

Greenhouse gas emissions occur from natural processes and human activities. Water vapor is the most important and abundant GHG in the atmosphere. However, human activities produce only a very small amount of the total atmospheric water vapor. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The main source of GHGs from human activities is the combustion of fossil fuels, including crude oil and coal. Examples of GHGs created and emitted primarily through human activities include fluorinated gases

(hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. The six GHGs mentioned above are regulated by the State of California.

Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO₂, which has a value of one. For example, CH₄ has a GWP of 21, which means that it has a global warming effect 21 times greater than CO₂ on an equal-mass basis (Intergovernmental Panel on Climate Change 2007). To simplify GHG analyses, total GHG emissions from a source are often expressed as a CO₂ equivalent (CO₂e). The CO₂e is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. While CH₄ and N₂O have much higher GWPs than CO₂, CO₂ is emitted in such higher quantities that it is the overwhelming contributor to CO₂e from both natural processes and human activities.

Recent observed changes due to global warming include rising temperatures, shrinking glaciers and sea ice, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges. International, national, and state organizations independently confirm these findings (Intergovernmental Panel on Climate Change 2007, U.S. Global Change Research Program 2009, and California Energy Commission 2009).

The most recent *California Climate Change Scenarios Assessment* predicts that temperatures in California will increase between 3°F to 10.5°F (1.7°C to 5.8°C) by 2100, based upon low and high GHG emission scenarios (California Energy Commission 2009). Predictions of long-term negative environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a substantial reduction in winter snow pack. In California, predictions of these effects include exacerbation of air quality problems, a reduction in municipal water supply from the Sierra snowpack, a rise in sea level that would displace coastal businesses and residences, an increase in wild fires, damage to marine and terrestrial ecosystems, and an increase in the incidence of infectious diseases, asthma, and other human health problems (California Energy Commission 2009).

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

In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EOs and the Energy Policy Act of 2005, the Marine Corps and Department of Defense (DOD) have implemented a number of renewable energy projects. The types of projects currently in operation within the southwest region include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. The military also purchases one-half of the biodiesel fuel sold in California and continues to promote and install new renewable energy projects within the southwest region.

On 18 February 2010, the CEQ proposed for the first time draft guidance on how federal agencies should evaluate the effects of climate change and GHG emissions for NEPA documentation (CEQ 2010). The CEQ does not propose a reference point as an indicator of a level of GHG emissions that may significantly affect the quality of the human environment. In the analysis of the direct effects of a

Proposed Action, the CEQ proposes that it would be appropriate to 1) quantify cumulative emissions over the life of the project; 2) discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and 3) qualitatively discuss the link between such GHG emissions and climate change. The CEQ accepted public comments on the draft guidance through May 24, 2010 and it is expected to issue final guidance in the near future.

On November 10, 2010, the DOD issued a desk reference for implementation of the USEPA's Final Rule for Mandatory Reporting of GHG's. This guide is designed to assist installations in GHG reporting and compliance (DOD 2010). MCB Camp Pendleton is not subject to the reporting requirements under the *USEPA's Final Rule for Mandatory Reporting of GHG's* or the *CARB's Regulation for the Mandatory Reporting of GHG emissions* since there are no stationary source emissions that exceed the applicable reporting thresholds.

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of project-induced GHG emissions to global climate change is discussed in the context of cumulative impacts in Chapter 5 of this SEA. Chapter 5 and Appendix B present estimates of GHG emissions generated by the Proposed Action.

3.6 HAZARDOUS MATERIALS AND WASTES

3.6.1 Definition of Resource

Hazardous materials addressed in this SEA are chemical substances that pose a substantial hazard to human health or the environment. For purposes of this SEA, a hazardous material is any item or agent (biological, chemical, physical) that has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. Types of hazardous materials include hazardous substances, hazardous chemicals, and toxic chemicals. Hazardous materials are characterized by their ignitability, corrosiveness, reactivity, and toxicity. In general, these materials pose hazards because of their quantity, concentration, physical, chemical, or infectious characteristics. Hazardous materials are regulated by CFR Title 49, the Toxic Substances Control Act of 1976, and Emergency Planning and Community Right to Know Act of 1986. Hazardous materials at MCB Camp Pendleton are managed in accordance with all federal, state, and MCB Camp Pendleton requirements for use and storage of hazardous materials.

A *hazardous waste* may be a solid, liquid, semi-solid, or contained gaseous material that alone or in combination may: 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes are regulated by the Solid Waste Disposal Act; CERCLA; and RCRA. Hazardous wastes are also controlled under the California Code of Regulations and these regulations are implemented by the California Department of Toxic Substances Control and the local Certified Unified Program Agency. The USMC is required to comply with these acts and all DOD requirements, as well as management plans specific to Camp Pendleton.

3.6.2 Existing Conditions

3.6.2.1 Hazardous Materials and Petroleum Substances and Wastes

The proposed project area consists of graded roadways that are mainly dirt-surfaced, except for the section beneath the railway bridge. No hazardous materials or wastes are stored at the site. The only hazardous materials used in connection with current site activities are fuels, oils, and hydraulic fluids contained within the tactical vehicles and personal vehicles traveling along the dirt roads. Civilian traffic passing through the project area on highway I-5 and the railway contain fuels as well as bulk quantities of hazardous materials and wastes. Hazardous materials and wastes present in civilian vehicles temporarily passing through the site represent a potential for accidental release, but are not considered an existing environmental condition. There are no hazardous waste storage facilities within or directly adjacent to the project footprint (USMC 2010). The nearest hazardous waste storage facility is located approximately 500 ft (153 m) north of the project site (USMC 2010).

3.6.2.2 Installation Restoration Program Sites

In 1990, the DON, USEPA and the State of California executed a Federal Facilities Agreement that provided the process for remediation of contaminated sites at MCB Camp Pendleton. Sites are identified and assessed for cleanup under the Installation Restorations (IR [CERCLA]), RCRA, and underground storage tank programs. There are no IR program sites located at or within a 1-mile (1.6-km) radius of the project footprint (USMC 2010). The closest petroleum release sites in the vicinity of the project area are located approximately 500 ft (153 m) and 0.5 mile (0.8 km) to the north and south of the project site, respectively (USMC 2010). Due to site assessment and cleanup in accordance with the above-referenced guidance, conditions at the petroleum release sites in the surrounding area are not expected to have adversely affected soil, surface water, or groundwater conditions within the project footprint.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides an assessment of the potential environmental consequences of implementing the Proposed Action and the No-Action Alternative within the designated project area. Direct impacts are associated with ground-disturbing activities resulting from demolition of the existing bridge, construction of the proposed bridge system, and access road improvements. Direct impacts are associated with the project footprint – the area of potential ground disturbance – and may be either temporary (reversible) or permanent (irreversible).

Indirect impacts are caused by or result from project-related activities, but occur later in time. Indirect impacts are diffuse, resource-specific, and less amenable to quantification or mapping than direct impacts, but still need to be considered.

Impacts would be either temporary (reversible) or permanent (irreversible). Impacts would be permanent within the area of the new bridge substructure and new roadwork, and are considered temporary in other areas subject to ground disturbance (i.e., construction laydown areas).

4.1 TOPOGRAPHY, GEOLOGY, AND SOILS

4.1.1 Proposed Action

The soil embankments below the I-5 and Pacific Coast Highway (PCH) overpasses would be cut and graded to accommodate the realignment of El Camino Real. Retaining walls would be installed to support the new openings. Construction impacts would include erosion and sedimentation from disturbed soil and soil stockpiles. Native soil would be replaced, where practicable, and imported soil material and road base would be used to stabilize the new engineering features. The proposed bridge would be designed and constructed in accordance with all applicable seismic, geotechnical, and uniform building code standards.

Because the construction of the transit and maneuver corridors would involve grading an area larger than 1 acre (0.4 hectare) in size, the construction contractor would be required to draft a construction SWPPP in accordance with San Diego RWQCB and MCB Camp Pendleton requirements. During the construction activities, BMPs established in the SWPPP would be implemented to reduce impacts to soils, including the use of silt curtains, fencing, and sediment traps and the application of water sprays and revegetation of disturbed soils when applicable. The site and building engineering designs would comply with all federal, state, local and MCB Camp Pendleton requirements for slope and seismic stability. Site drainage would also be designed to maintain surface integrity. Following construction, stormwater runoff would be managed in accordance with MCB Camp Pendleton's SWPPP to minimize soil loss from erosion. Special conservation measures (Section 2.4) would be implemented to minimize grading during the rainy season and to control soil erosion. Revegetation along the roadside would provide long-term soil stabilization.

The project area is located over low sloping land. Road improvements would not modify the regional topography. With the incorporation of SCMs to stabilize exposed slopes during and after construction, and to minimize erosion and sedimentation downslope from the project footprint, indirect impacts outside of the project footprint are expected to be minimal and not significant.

Temporary impacts due to dust and the alteration of runoff during construction would be largely confined to the project footprint and would be minimized and less than significant with the incorporation of SCMs

and implementation of the SWPPP. Therefore, implementation of the Proposed Action would not significantly impact topography, geology, and soils.

4.1.2 Mitigation Measures

Implementation of the Proposed Action would not result in significant impacts to topography, geology, and soils; therefore, no mitigation measures are proposed.

4.1.3 No-Action Alternative

Under the No-Action Alternative, the DON/USMC and NCTD/SANDAG would not implement the new Green Beach bridge construction and modification of access points. Existing conditions (as described in Section 3.1) would remain unchanged and no significant impacts to topography, geology, and soils would occur.

4.2 HYDROLOGY

4.2.1 Proposed Action

4.2.1.1 Surface Water

The Proposed Action would require replacement of the Green Beach Bridge system and the realignment of El Camino Real under the I-5. To accomplish this would require soil excavation and removal from the area below the south abutment of the overpasses. The surface water modifications would be minor and would preserve the underlying natural drainage conveyance to San Onofre Creek. There would be no significant impact to existing natural drainage flow patterns. Project design would also include a vegetated bioswale to be installed near the southwestern side of Beach Club Road, to maintain the quality of water entering San Onofre Creek from the new roadway. Specific design information regarding the vegetated bioswale would be provided to Public Works, Facilities Maintenance, and the Stormwater Branch of Environmental Security, for review and approval before installation.

Slope protection would be constructed to reduce or eliminate disturbance to San Onofre Creek, located adjacent to the existing roadway. During the construction period, a project specific SWPPP and BMPs would be implemented to minimize impacts to surface waters resulting from construction activities. The construction contractor would be required to file a Notice of Intent with the State Water Resources Control Board to obtain coverage under the National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activity.

As noted in Section 3.2, recent storm events have eroded portions along the lower banks of the San Onofre Creek and southern portions of the mitigation site and construction laydown area. The erosion does not affect the bridge construction and associated road realignment. Construction laydown would avoid the washed out area and the mitigation site would be altered to avoid the washed out area. In addition, as discussed in Section 5.2.6 storm repairs to Beach Club Road are proposed to repair specific damaged caused by the December 2010 storm events. These repairs would be conducted in accordance with applicable federal, state, and local regulations and requirements.

Upon completion of the construction phase, tactical vehicles would operate on both lanes of the new roadway. The operation of additional tactical vehicle trips on the new two-lane roadway does not represent a significant change from existing conditions. Therefore, implementation of the Proposed Action would have no significant impacts on surface water quality or flow patterns in the project area.

4.2.1.2 Groundwater

The depth of construction required for the Proposed Action is estimated to be approximately 30 ft (9.1 m) below ground surface for installation of the CIDH piles associated with the new bridge substructure. The groundwater table in the project area would be encountered at the elevation of San Onofre Creek, or below the channel floor elevation if the creek is dry. Thus, depending on the time of year, a 30-ft (9.1-m) deep excavation near San Onofre Creek would be likely to encounter groundwater. Before construction, geotechnical borings would be completed at the project site to allow engineering controls to determine subsurface conditions, including groundwater elevation, and incorporate engineering controls as needed for proper underground dewatering and drainage into the project design and construction site procedures. Groundwater dewatering disposal within the sanitary sewer, storm drain, surface water, or on land would be conducted in accordance with all appropriate regulatory requirements for groundwater dewatering disposal. The proposed project would not require extensive excavation below the level of the existing road. It is anticipated that each of the 10 CIDH piles would require excavation of a 3 to 5 ft (0.9 to 1.5 m) in diameter area. Following installation of the CIDH piles, material excavated below grade would be replaced with soil and road base material.

In the immediate project area, the direction of groundwater flow is towards San Onofre Creek. The Proposed Action would include construction of above-grade retaining walls in embankment fill beneath the I-5 and PCH overpasses, and installation of 10 below grade CIDH supports for the new railway bridge. These new construction features would not interfere with the natural flow of groundwater in the subsurface alluvium. Thus, there would be no significant impacts to groundwater with implementation of the Proposed Action.

4.2.2 Mitigation Measures

Implementation of the Proposed Action would not result in significant impacts to hydrology (surface water and groundwater resources); therefore, no mitigation measures are proposed.

4.2.3 No-Action Alternative

Under the No-Action Alternative, the DON/USMC and NCTD/SANDAG would not implement the new Green Beach bridge construction and modification of access points. Existing conditions (as described in Section 3.2) would remain unchanged and no significant impacts to hydrology would occur.

4.3 BIOLOGICAL RESOURCES

The following section describes the potential temporary and permanent impacts to biological resources that would result from implementation of the Proposed Action. Permanent impacts would result from the complete removal of vegetation, habitat, or individuals of a species. Temporary impacts would result from project construction disturbance. Factors especially relevant to determining whether impacts would be significant include the severity of any effects on individuals or habitats of threatened and endangered species.

4.3.1 Proposed Action

4.3.1.1 Plant and Aquatic Communities

Table 4.3-1 shows the acreages of temporary and permanent impacts to plant communities that would result from implementation of the Proposed Action. Permanent impacts would occur to communities that are within the bridge and retaining wall footprints. Temporary impacts would occur within a 15-ft buffer of the bridge and retaining wall and within the construction staging area.

Table 4.3-1. Temporary and Permanent Impacts to Plant Communities

Plant Community	Temporary Impacts (acres)	Permanent Impacts (acres)	Total (acres)
Disturbed Coastal Sage Scrub (Diegan)	0.07	0.01	0.08
Disturbed/Ruderal Habitat	0.47	0.02	0.49
Developed	0.05	0.11	0.16
Total	0.59	0.14	0.73

Construction of the Green Beach bridge improvements would permanently remove or disturb 0.01 acre (<0.01 hectare) of unoccupied D-CSS and 0.13 acre (0.05 hectare) developed/disturbed areas.

Cleared areas and temporary disturbance would be revegetated after construction. An appropriate mix of native species, as approved by AC/S ES, would be planted and maintained until the plant community is established and the soils are stabilized. The affected areas would remain in degraded condition for several years following construction while revegetation takes place.

Impacts to the creek would consist mostly of temporary noise and dust. No project activities would take place within San Onofre Creek and no direct impacts to San Onofre Creek would occur. The banks of San Onofre Creek would be protected from disturbance and encroachment; revegetation efforts would follow construction activity.

4.3.1.2 Wildlife

Construction activities could eliminate or displace wildlife from up to 0.73 acre (0.30 hectare) of land that could provide wildlife habitat; however, 0.65 acre (0.26 hectare) of the 0.73 acre (0.30 hectare) is disturbed or developed. A small number of individuals of the smaller, less mobile, and burrowing species could be killed by construction, whereas mobile species would disperse to surrounding areas. The plant communities that would be affected are abundant and widespread on MCB Camp Pendleton and are readily available in the adjacent area. An SCM would prevent the removal of any occupied nests of migratory birds in the construction area. Otherwise, the removal or temporary alteration of relatively small areas of habitat along the edges of the heavily used beach access road would not significantly impact any migratory bird species.

Indirect impacts such as noise and visual disturbance, vehicle access, dust, and runoff may occur beyond the project footprint, but the confinement of construction activities to specified areas and requirements for erosion control and revegetation (refer to Section 2.4) would ensure that these types of indirect effects are temporary and less than significant. These preventative measures would minimize adverse impacts to wildlife species and habitat.

Increased sound levels associated with excavation and compaction equipment may occur during construction. This activity would be short-term and minor; no long-term construction impacts would occur. Vehicle noise is common in the area due to traffic along I-5 and frequent trips along the railway. Any noise introduced through construction would be neither abnormal nor extreme. There are no sensitive receptors around the vicinity of the project area, and wildlife in the area is presumed to be

acclimated and tolerant of some level of vehicle activity. Temporary noise impacts from construction activities would not be significant.

The majority of the project area is on disturbed or developed land, adjacent to a major interstate highway and railway. Thus, ground disturbance activity and noise elements of the Proposed Action are consistent with the existing condition. SCMs are proposed to monitor wildlife during construction, as well as to control erosion and runoff. Therefore, no significant impacts to wildlife would occur from implementation of the Proposed Action.

4.3.1.3 Special Status Species

The federally listed species that are known to occur within or adjacent to the project action area are CAGN, LBVI, SWFL, and TWG. LBVI regularly nests in the riparian habitat of San Onofre Creek, whereas SWFL has only occurred infrequently and is much less likely to be affected. For both species, through implementation of avoidance and minimization measures and SCMs (refer to Section 2.4), direct and indirect effects on listed riparian bird species and their habitat would be avoided, minimized, and compensated for in a manner consistent with the Riparian/Estuarine BO (USFWS 1995a).

The USFWS provided an informal consultation/Riparian BO Class II Concurrence Letter to the USMC (USFWS 2009) for the P-159A Green Beach project. This letter confirmed that by following the proposed avoidance and minimization measures the project would not be likely to adversely affect any federally listed species. In addition, the USFWS agreed that the project is consistent with the Riparian/Estuarine BO.

For this SEA, the USMC consulted informally with the USFWS as required by the ESA for additional impacts which could occur from implementation of the Proposed Action. The USFWS provided an email to the USMC (refer to Appendix A) indicating the Proposed Action is not anticipated to have any additional effects to federally listed species, beyond those already analyzed in the October 20, 2009, informal consultation/Riparian BO Class II Concurrence Letter. Effects on each species are summarized below.

CAGN

Implementation of the Proposed Action would impact up to 0.08 acre (0.03 hectare) of D-CSS habitat. The project area includes semi-disturbed habitat patches along the existing railway. CAGN has been detected in CSS habitat west of the project area, but has not been detected within the project area itself.

As part of the SCMs, initial site clearing of D-CSS would take place outside the CAGN breeding season (15 February to 31 August). Construction activities may displace or disperse transient CAGN individuals to adjacent habitat, but this activity would not significantly impact the species or its local survival. A pre-construction nest survey would be conducted and any CAGN nests would be marked with protective fencing. Site clearing of vegetation occupied by CAGN would be delayed until nesting fails or until at least 10 days after the young fledge from the nest, unless MCB Camp Pendleton and USFWS assess the circumstances and mutually agree that activities can proceed without likely disturbance of CAGN and their nests.

The D-CSS habitat that would be impacted consists of patchy areas immediately adjacent to the railway. These areas are semi-disturbed and do not provide high quality CAGN habitat due to several interlacing roadways in a small geographic area. Temporary disturbance would be revegetated with appropriate CSS species and would return to pre-construction state. The topographic slope would not be significantly altered and the potential dispersal corridor along I-5 would not be adversely modified. As a result, the

Proposed Action may affect, but is not likely to adversely affect, the CAGN, and no significant impact on the species would occur.

LBVI

No direct impacts to riparian habitat would occur from implementation of the Proposed Action. Riparian habitat occurs just north of the project area, and one territory of LBVI could be disturbed by project construction. However, LBVI in the area are accustomed to noise and disturbance from cars and the railroad from the existing road and railway. SCMs would be implemented to minimize impacts to the LBVI in the vicinity of the project area. No significant impacts to LBVI would result from implementation of the Proposed Action.

SWFL

No direct impacts to riparian habitat would occur from implementation of the Proposed Action. Riparian habitat occurs just north of the project area which could support SWFL. However, SWFL do not currently breed in the area (Howell and Kus 2009). SCMs would be implemented to minimize impacts to the wildlife in the vicinity of the project area. No significant impacts to SWFL would result from implementation of the Proposed Action.

TWG

San Onofre Creek would be avoided; thus, no impacts to TWG are anticipated from the Proposed Action. SCMs would be implemented to avoid any impacts to the creek from construction activities.

Other Special Concern Species

As described in Section 3.3, two special concern wildlife species, the yellow warbler and yellow-breasted chat have the potential to occur in riparian habitat in the vicinity of the project area. These species are wide ranging over MCB Camp Pendleton and are not dependent on the Green Beach project area. No significant impacts on populations or the overall availability of habitat for these species would occur.

4.3.2 Mitigation Measures

Implementation of the Proposed Action and associated SCMs would not result in significant impacts to biological resources; therefore, no mitigation measures are proposed.

4.3.3 No-Action Alternative

Under the No-Action Alternative, the DON/USMC and NCTD/SANDAG would not implement the new Green Beach bridge construction and modification of access points. Existing conditions (as described in Section 3.3) would remain unchanged and no significant impacts to biological resources would occur.

4.4 CULTURAL RESOURCES

4.4.1 Proposed Action

The Green Beach project area was surveyed by ASM Affiliates in February 2008 (ASM 2008). The subsequent survey report consisted of ASMs evaluation of the potential for impacts to one archaeological site (SDI-1074) previously determined eligible for listing on the NRHP, and the possible eligibility for inclusion on the NRHP of two historic structures, the San Onofre Railway Trestle Bridge and the San Onofre Creek Bridge, U.S. Highway 101. No sensitive objects of Native American heritage value were identified during the archaeological investigations for the Proposed Action. A Native American monitor was present and consulted with regularly during the entire excavation. The USMC prepared and submitted a cultural resources survey report to the CASHPO. The CASHPO provided a letter to the

USMC (refer to Appendix C of the P-159A EA) concurring that a finding of No Adverse Effect with conditions is appropriate pursuant to 36 CFR Part 800.5(b) for this project, and that the documentation supporting this finding has been provided pursuant to 36 CFR Part 800.11(d).

As part of this SEA, ASM Affiliates prepared a Supplemental Historic Property Evaluation for the project footprint (ASM 2011) indicating that there would be No Adverse Effect to archaeological sites or historic properties with implementation of the Proposed Action. The USMC provided this report to CASHPO requesting concurrence that there would be No Adverse Effect to archaeological sites or historic properties. The CASHPO provided a letter to the USMC (refer to Appendix A of this SEA) concurring that a finding of No Adverse Effect with conditions is appropriate pursuant to 36 CFR Part 800.5(b) for this project, and that the documentation supporting this finding has been provided pursuant to 36 CFR Part 800.11(d). The results of the above mentioned investigations suggest that SDI-1074 does not appear to extend into the project area, thus it is unlikely that proposed construction activities would encounter archaeological deposits in this portion of the project area, including those associated with SDI-1074.

As stated in the CASHPO correspondence letter dated 30 October 2009, SDI-1074 (including a buffer zone around the site) would be fenced off during construction activities to prevent inadvertent impacts from equipment during construction activities.

While no portion or at least intact portion of SDI-1074 exists within the project APE, it is possible that isolated materials of cultural sensitivity and/or archaeological significance may exist within secondary contexts in the project area. Therefore, as recommended in the Green Beach Cultural Resources Evaluation (ASM 2008, 2011) a professional archaeologist and a Native American representative would monitor all construction activity for the proposed project along El Camino Real and Beach Club Road. A monitoring and discovery plan would be submitted 30 days before construction begins, for approval by the AC/s Cultural Resources Branch Head. In addition, a technical monitoring report would be prepared and submitted to the CASHPO upon the project's completion as stated in the CASHPO correspondence letter dated 30 October 2009 (refer to Appendix C of the P-159A EA). Therefore, implementation of the Proposed Action would not adversely affect any significant archaeological resources.

Based on the Green Beach Historic Evaluation results, both the San Onofre Railway Trestle Bridge and the San Onofre Creek Bridge, U.S. Highway 101 are recommended as *not* eligible for listing in the NRHP (ASM 2008, 2011). Thus, neither bridge requires further assessment or documentation. Therefore, no significant impacts to historic resources would occur with implementation of the Proposed Action.

4.4.2 Mitigation Measures

Implementation of the Proposed Action would not result in significant impacts to cultural resources; therefore, no mitigation measures are proposed.

4.4.3 No-Action Alternative

Under the No-Action Alternative, the DON/USMC and NCTD/SANDAG would not implement the new Green Beach bridge construction and modification of access points. Existing conditions (as described in Section 3.4) would remain unchanged and no significant impacts to cultural resources would occur.

4.5 AIR QUALITY

Emission thresholds associated with federal CAA conformity requirements are the primary means of assessing the significance of potential air quality impacts associated with implementation of a Proposed Action under NEPA. A formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source

emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. For those air pollutants which are in attainment of the NAAQS, the general conformity requirements and thresholds do not apply. For these air pollutants, the USEPA Prevention of Significant Deterioration (PSD) permitting program would only apply if new major stationary sources of emissions or major modifications at existing stationary sources would be implemented in the vicinity of a PSD Class I Area.

Significant air quality impacts would occur if implementation of any of the alternatives would directly or indirectly:

- 1) expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- 2) cause a net increase in pollutant or pollutant precursor emissions that exceeds relevant emission significance thresholds (such as CAA conformity *de minimis* levels or the numerical values of major source thresholds for nonattainment pollutants); or
- 3) conflict with adopted air quality management plans, policies, or programs.

Impacts would also be potentially significant within the MCB Camp Pendleton region if project emissions exceed the thresholds that trigger a conformity determination under Section 176(c) of the 1990 CAA (100 tons per year of VOC, NO_x, or CO). If emissions exceed this threshold, further analysis of the emissions and their consequences would be performed to assess whether there was likelihood of a significant impact to air quality. The nature and extent of such analysis would depend on the specific circumstances. The analysis could range from simply a more detailed and precise examination of the likely emitting activities and equipment, to air dispersion modeling analyses. Section 4.5.3 presents the Conformity Applicability Analysis for actions within the SDAB and Appendix B contains the Record of Non-Applicability (RONA) for CAA Conformity.

4.5.1 Proposed Action

4.5.1.1 Construction Assumptions

Air quality impacts from proposed construction activities would occur from (1) combustion emissions due to the use of fossil fuel-powered equipment; (2) fugitive dust emissions (PM₁₀) during construction activities, earth-moving activities, and the operation of equipment on bare soil; and (3) VOC emissions from application of asphalt materials during paving operations.

A list of estimated equipment required for construction activities, estimates of workforce requirements, and haul truck travel are provided in Appendix B, along with the emission calculations for all construction activities. It has been estimated that all construction activities would be completed over the course of one year.

Total emissions resulting from road repair and construction activities have been estimated using data presented in Chapter 2, general air quality assumptions, and emission factors compiled from the following sources: *OFFROAD Emission Factors* and *CARB EMFAC2007 Model* (CARB 2007), and *Compilation of Air Pollutant Emission Factors*, AP-42 (USEPA 1995, 2006).

After PM₁₀ is estimated, the fraction of fugitive dust emitted as PM_{2.5} is estimated, based on the Southern California Air Quality Management District's (SCAQMD) Final Methodology to Calculate PM_{2.5} and PM_{2.5} significance thresholds (SCAQMD 2006). This guidance document indicates that fugitive dust PM₁₀ is 21% PM_{2.5}, heavy equipment PM₁₀ is 89% PM_{2.5}, and vehicular emissions of PM₁₀ are 99% PM_{2.5} (SCAQMD 2006).

4.5.1.2 Construction Impacts

Estimated construction emissions due to implementation of the Proposed Action are shown in Table 4.5-1. Estimated emissions associated with construction activities would be below the *de minimis* threshold levels for CAA conformity; therefore, no significant impacts to air quality would occur. In addition, the PSD permitting program and significance criteria would not be applicable for the Proposed Action since no stationary sources of emissions would be implemented and there are no PSD Class I areas in the vicinity of the Proposed Action. Furthermore, when compared to the PSD threshold of 250 tons per year, the estimated construction emissions of these criteria pollutants would be well below these levels.

Table 4.5-1. Estimated Emissions Resulting from Implementation of the Proposed Action

Estimated Emissions Per Construction Phase	Emissions ¹ (tons/year)					
	CO	VOCs	NO _x	SO _x	PM ₁₀	PM _{2.5}
Phase One Construction Emissions	1.11	0.24	2.03	0.00	0.34	0.10
Phase Two Construction Emissions	2.48	0.54	4.75	0.01	0.38	0.24
Phase Three Construction Emissions	0.52	0.11	0.82	0.00	0.08	0.05
Subtotal	4.11	0.89	7.60	0.01	0.80	0.39
<i>de minimis</i> threshold ²	100	100	100	NA	NA	NA
Exceeds <i>de minimis</i> threshold?	No	No	No	No	No	No

Note: ¹ SDAB is a basic nonattainment area for the 8-hour O₃ NAAQS (VOCs and NO_x are precursors to the formation of O₃), is a maintenance area for CO NAAQS, and is in attainment of the NAAQS for all other criteria pollutants.

² *de minimis* thresholds are developed from SDCAPCD major source thresholds; *de minimis* thresholds are not applicable to NAAQS attainment areas (i.e., SO₂, PM₁₀ and PM_{2.5}).

Sources: CARB 2011c; USEPA 2011.

4.5.2 Conformity Applicability Analysis

The estimated construction emissions associated with the Proposed would be below the *de minimis* threshold levels for CAA conformity. Therefore, the Proposed Action would conform to the SDAB SIP and would not trigger a conformity determination under Section 176(c) of the CAA. The DON/USMC has prepared a RONA for CAA conformity (refer to Appendix B of this SEA).

4.5.3 Mitigation Measures

Implementation of the Proposed Action would not result in significant air quality impacts; therefore, no mitigation measures are proposed.

4.5.4 No-Action Alternative

Under the No-Action Alternative, the DON/USMC and NCTD/SANDAG would not implement the new Green Beach bridge construction and modification of access points. Existing conditions (as described in Section 3.5) would remain unchanged and no significant impacts to air quality would occur.

4.6 HAZARDOUS MATERIALS AND WASTES

4.6.1 Proposed Action

Hazardous materials involved in bridge and roadway construction projects typically include fuels, hydraulic fluid, and paving materials. Construction contractors would be required to comply with all federal, state, and MCB Camp Pendleton requirements for use and storage of hazardous materials and hazardous wastes at the site and for proper off-site disposal of hazardous materials. Contractors would also be required to prepare and implement hazardous materials/hazardous wastes management plans that

include contingencies for accidental releases. Construction equipment would be equipped with spill containment kits. All contractors' vehicle fueling and repairs would take place at off-site locations. Construction contractors would be required to prepare and implement a SWPPP and follow BMPs for hazardous materials and hazardous wastes associated with the construction activities. There would be no storage of hazardous materials or waste on-site.

Upon completion of the construction phase, operations at the site would be the same as those occurring before construction of the new bridge and access points. There would be no increase in the quantity or type of hazardous materials present at the site.

Therefore, no increase in human health risk or environmental exposure to hazardous materials or hazardous wastes would result from implementation of the Proposed Action and significant hazardous materials or hazardous wastes impacts would not occur.

4.6.2 Mitigation Measures

Implementation of the Proposed Action would not result in significant hazardous materials or hazardous wastes impacts; therefore, no mitigation measures are proposed.

4.6.3 No-Action Alternative

Under the No-Action Alternative, the DON/USMC and NCTD/SANDAG would not implement the new Green Beach bridge construction and modification of access points. Existing conditions (as described in Section 3.6) would remain unchanged and no significant hazardous materials and wastes impacts would occur.

CHAPTER 5

CUMULATIVE EFFECTS

5.1 CUMULATIVE EFFECTS

The analysis of cumulative impacts (or cumulative effects)¹ follows the objectives of NEPA of 1969 and CEQ regulations (40 CFR Parts 1500-1508) that provide the implementing procedures for NEPA. The CEQ regulations define cumulative impacts as:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 CFR 1508.7).

The CEQ also provides guidance on cumulative impacts analysis in *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ 1997). Noting that environmental impacts result from a diversity of sources and processes, this CEQ guidance observes that “no universally accepted framework for cumulative effects analysis exists,” while noting that certain general principles have gained acceptance. One such principle provides that “cumulative effects analysis should be conducted within the context of resource, ecosystem, and community thresholds—levels of stress beyond which the desired condition degrades.” Thus, “each resource, ecosystem, and human community must be analyzed in terms of its ability to accommodate additional effects, based on its own time and space parameters.” Therefore, cumulative effects analysis normally encompasses geographic boundaries beyond the immediate area of the Proposed Action, and a time frame including past actions and foreseeable future actions, to capture these additional effects. Bounding the cumulative effects analysis is a complex undertaking, appropriately limited by practical considerations. Thus, CEQ guidelines observe, “[i]t is not practical to analyze cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.”

5.1.1 Geographic Boundaries for Cumulative Impacts Analysis

Geographic boundaries for analyses of cumulative impacts in this SEA vary for different environmental resources. For example, for air quality, the potentially affected air basin is the appropriate boundary for assessment of cumulative impacts from releases of pollutants into the atmosphere. For resources such as wildlife, impacts from the Proposed Action might combine with impacts from distant sources to affect the resource species, necessitating a wider geographic scope for the analysis.

Cumulative effects may occur when there is a relationship between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. Actions overlapping with or in close proximity to the Proposed Action can have more potential for cumulative effects on “shared resources” than actions that may be geographically separated. Similarly, actions that coincide temporally would tend to offer a higher potential for cumulative effects.

¹ CEQ Regulations provide that the terms “cumulative impacts” and “cumulative effects” are synonymous and can be used interchangeably (40 CFR § 1508.8(b)).

In this SEA, an effort has been made to identify all actions in or near the action area that is being considered, and that are in the planning stage at this time. To the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action outlined in this SEA, these actions are included in the cumulative effects analysis.

5.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

This EA applies a stepped approach to provide decision-makers with not only the cumulative effects of the action alternatives, but also the incremental contribution of the following past, present, and reasonably foreseeable actions.

5.2.1 MCB Camp Pendleton Military Family Housing PPV (Camp Pendleton Phase VI)

A new Public-Private Venture (PPV) military family housing (MFH) development on 77 acres (31 hectares) at the Stuart Mesa agricultural field is under construction abutting the existing Stuart Mesa Housing to the east. The development includes the construction of up to 172 MFH units, off-street parking spaces for each dwelling unit, one full-size basketball court, one half-size basketball court, three tot lots, one play lot, and a chain-link fence surrounding the site on all sides except on the eastern boundary. NAVFAC SW prepared an EA for the project, and a FONSI was published in September 2009. This project is currently under construction.

5.2.2 New Naval Hospital

A new Naval Hospital to replace the existing facility in the 27 Area is under construction in the 20 Area, just north of the MCB Camp Pendleton Main Gate. The hospital is planned as a four-story facility with up to three parking structures that are each not to exceed five stories. The hospital will provide emergency services, in-patient services, out-patient clinics, ancillary services, surgical services, logistics, and meet other medical needs. An EA for this project has been completed, and a FONSI was signed in January 2010. This project is currently under construction.

5.2.3 New Main Exchange and Service Mall

A new Main Exchange and Service Mall is under construction in the 20 Area, just north of the MCB Camp Pendleton Main Gate (north of the site for the new Naval Hospital). The Exchange and Service Mall will include a large one story “big box” retail building and up to four smaller buildings to support the following potential services: a military clothing store; service vendors; a restaurant; a credit union; a warehouse, administration and support; an outdoor lawn and garden shop; and surface parking for approximately 580 vehicles. An EA for this project has been completed, and a FONSI was signed in January 2010.

5.2.4 Storm Repairs to Beach Club Road

The USMC proposes to repair damages to Beach Club Road that were caused by the December 2010 Storm Events, which resulted in the closures of Beach Club Road. The project would include removal and disposal of damaged pavement, minor excavation work, importing backfill and compacting the eroded areas, replacing damaged utilities, providing additional pavement and road base as necessary, reconstruction of the side slopes, providing rip rap protection over the side slope to reduce future damage to the road from the San Onofre Creek, and incidental related work. The work also includes the removal of debris and sedimentation from the Arizona Crossing Structure and the creek crossing. NEPA analysis for this project is currently underway.

5.2.5 Beach Club Road Redevelopment Area

The scope of the environmental planning effort is to assess the environmental impacts of the proposed redevelopment and improvements in the San Onofre Beach and vicinity property and reuse of Building 51811 at MCB Camp Pendleton as a potential recreational beach and year round destination resort. The project footprint is approximately 65 acres in total. The project boundary is defined by Beach Club Road to the Northwest, Mean High Tide Line to the South West, RV Parking Access Road to the South East and Rail Line from San Clement to the North East. NEPA analysis and documentation are ongoing.

5.2.6 Operations Access Points (P-159 Red Beach)

The USMC proposes to construct and modify new and existing transit and maneuver corridors to facilitate the transit of troops and tactical vehicles between Red Beach and inland training areas at MCB Camp Pendleton. The project would consist of resurfacing Red Beach Road and constructing new undercrossings beneath I-5 and the railway embankment. A FONSI was signed on 02 April 2010. The P-159 EA did not analyze the replacement of the railway double arch bridge due to its location within the NCTD rail right-of-way. In addition, since preparation of the P-159 EA more detailed information for demolition of the existing bridge, construction of a new bridge system, and construction of a new access road within the NCTD rail easement or right-of-way has become available, necessitating an expanded analysis of these project components. Therefore, a Red Beach SEA is currently underway to address these additional components and is expected to be completed in 2011.

5.2.7 NCTD Santa Margarita River Bridge Replacement and Second Track Project

This project includes the replacement of the existing single-track Santa Margarita River Railway Bridge with a new two-track bridge, construction of a 0.8-mile (1.3-km) second rail track, and an upgrade and realignment of the existing Fallbrook Junction Passing Track (1.7 miles [2.7 km]) for higher speed. Completion of the new double-track segment portion of the project would connect the Stuart Mesa Passing Track with the Fallbrook Junction Passing Track to provide a 4.5 mile (7.2 km) segment of continuous double-track with maximum speeds between 75 and 90 miles per hour (121 and 145 km per hour). An EA is being prepared to analyze potential environmental impacts of the project.

5.2.8 Interstate 5 North Coast Corridor Project

I-5 North Coast Corridor Project proposed improvements include one or two High Occupancy Vehicle Managed Lanes in each direction, auxiliary lanes where needed, and possibly one general purpose lane in each direction. The main purpose of the project is to maintain or improve the existing and future traffic operations in the I-5 North coast corridor so as to improve the safe and efficient regional movement of people and goods for the design year of 2030. An EIS/EIR for this project is currently in progress.

5.2.9 Basewide Utility Infrastructure Improvements Project

The USMC will implement six utility projects in various locations throughout MCB Camp Pendleton. The purpose of these actions are to provide reliable, new, expanded, and compliant utility systems to support military training and operations, as well as the delivery of life support and quality of life services. These improvements will also provide system redundancy that will enable the delivery of utility services during periods of scheduled and unscheduled/emergency outages. The utility infrastructure projects are needed to modernize and expand MCB Camp Pendleton's aging (1940s/50s era) utility systems and infrastructure. Utilities included are electrical, water, waste water, natural gas, and communications. An EIS was completed and the Record of Decision was signed in September 2010.

5.2.10 Repair of 24 Access Roads

The purpose of this project is to repair and stabilize 24 existing dirt roads throughout MCB Camp Pendleton. The roads are used to provide access to ranges in support of amphibious and inland training activities. An estimated 54 miles (87 km) of roads are involved in the project. The roads proposed for repair are located on sloping coastal terraces, hillsides, and valleys dissected by gullies, ravines, and swales. The soils underlying the roads are susceptible to erosion. The EA is in progress.

5.2.11 Grow the Force

The Marine Corps 202k Plus Up, also known as “Grow the Force” includes an increase of approximately 3,000 personnel at MCB Camp Pendleton and the placement and use of temporary and permanent facilities. At present, the Grow the Force project includes approximately 60 construction projects at MCB Camp Pendleton. An EA evaluating the potential impacts of 39 projects has been completed and the FONSI signed. The remaining 21 projects have received Categorical Exclusions under NEPA.

5.2.12 MCB Camp Pendleton MFH PPV (Camp Pendleton Phase VII)

A new PPV military family housing development on up to approximately 132.17 acres (ac) (53.48 hectares) of former agricultural land for a maximum of 351 military family housing units and supporting infrastructure was recently approved. The site design for the proposed residential housing will consist of multi-family residential three- and four-bedroom units. Utility connections for potable water, sewer, and electrical services are all part of the project. Access to the new housing area will be provided via a new two-lane road that will extend from existing Cocklebur Canyon Road, west of the site, through the project site, to join existing Mitchel Boulevard, southeast of the site. An EA for this project was completed and a FONSI was signed in June 2011.

5.2.13 Stuart Mesa Bridge

Widening Stuart Mesa Bridge segment of Stuart Mesa Road is being considered by Camp Pendleton, which would include reconstruction of the existing bridge crossing over the Santa Margarita River. Reconstruction of the existing bridge crossing over the Santa Margarita River could have potential environmental impacts to the riparian habitat below. The Stuart Mesa Bridge project (P1039) has not received funding and NEPA evaluation is not underway.

5.3 POTENTIAL CUMULATIVE IMPACTS BY ENVIRONMENTAL RESOURCE AREA

This section addresses the potential cumulative impacts with implementation of the Proposed Action in conjunction with the projects identified above. These projects represent past, present, and reasonably foreseeable actions with the potential for resulting in cumulative impacts when considered in conjunction with potential impacts from implementation of the Green Beach Operations Access Points.

5.3.1 Topography, Geology, and Soils

Implementation of the Proposed Action would not result in significant impacts to geological resources. Construction activities may cause a temporary increase in erosion; however, BMPs established in the SWPPP would be implemented to reduce impacts to soils, including the use of silt curtains, fencing, and sediment traps and the application of water sprays and revegetation of disturbed soils when applicable. Cumulatively, the projects described in Section 5.2 would have only very minor, temporary and localized effects on soils. The incremental effects of the Proposed Action would not add appreciably to any existing or future erosion associated with other anthropogenic activities. Therefore, the Proposed Action,

in conjunction with the projects described in Section 5.2, would not result in significant cumulative impacts to topography, geology, and soils.

5.3.2 Hydrology

Implementation of the Proposed Action would not result in significant impacts to the quality or quantity of surface water or groundwater resources, or to floodplains and wetlands at MCB Camp Pendleton. The Proposed Action would include a vegetated bioswale to be installed near the southwestern side of Beach Club Road, to maintain the quality of water entering San Onofre Creek from the new roadway. Continuing adherence to the state and federal regulations would further ensure that the Proposed Action, in conjunction with the projects described in Section 5.2, would not result in significant cumulative impacts to surface water and groundwater resources.

5.3.3 Biological Resources

Implementation of the Proposed Action would not result in significant impacts to biological resources. The USMC prepared a Biological Assessment for the P-159A EA and determined that the Proposed Action would not be likely to adversely affect any threatened or endangered species. The USFWS provided a Class II Concurrence Letter to the USMC (USFWS 2008b) for the P-159A Green Beach project which confirmed that by following the proposed avoidance and minimization measures the project would not be likely to adversely affect any federally listed species. In addition, the USFWS agreed that the project is consistent with the Riparian/Estuarine BO (refer to Appendix C of the P-159A EA). As part of this SEA, the USMC has consulted informally with the USFWS as required by the ESA for additional impacts that could occur from implementation of the Proposed Action. Avoidance and minimization measures provided in the P-159A Concurrence Letter would be implemented as SCMs, which are included and described in Section 2.4.1 of this SEA.

Past, present, and future projects have been and would be similarly required to follow the requirements of the CWA and ESA, thereby avoiding or minimizing potential cumulative effects. Through the INRMP (USMC 2007), a number of measures have been identified to monitor the combined effects of USMC activities on the lands and biological resources of MCB Camp Pendleton, and to identify and correct potential problems. As a result, the Proposed Action, in conjunction with other projects described in Section 5.2, would not result in significant cumulative impacts to biological resources.

5.3.4 Cultural Resources

There are no cultural resources, including historic districts, buildings, or objects that would be impacted under the Proposed Action. The USMC prepared and submitted a cultural resources survey report to the CASHPO. The CASHPO provided a letter to the USMC (refer to Appendix C of the P-159A EA) concurring that a finding of No Adverse Effect with conditions is appropriate pursuant to 36 CFR Part 800.5(b) for this project and that the documentation supporting this finding has been provided pursuant to 36 CFR Part 800.11 (d). As part of this SEA, the USMC prepared a Supplemental Historic Properties Evaluation to address the extended portion of the APE. The conclusions of this report determine that there would be no adverse effects to historic properties by the Proposed Action. The Proposed Action and projects listed in Section 5.2 are not expected to disturb identified cultural resource sites. Mitigation strategies developed under any Programmatic Agreement with the CASHPO, such as avoidance or data recovery, would reduce impacts to below a level of significance. Any Government-to-Government communication process with Native American Indian Tribes would continue during project implementation and any impacts would be avoided or minimized. Any activities with the potential for significant impacts to cultural resources would require Section 106 consultation with the CASHPO, and

would be mitigated as required. These requirements would reduce impacts of the Proposed Action and other past, present, and reasonably foreseeable projects to below a level of significance. Therefore, the Proposed Action, in conjunction with the projects described in Section 5.2, would not result in significant cumulative impacts to cultural resources.

5.3.5 Air Quality

Criteria Pollutants

The region of influence (ROI) considered in this air quality cumulative analysis for criteria pollutants includes the entire San Diego Air Basin (SDAB). Cumulative impacts resulting from the Proposed Action, in conjunction with impacts from other projects discussed in Section 5.2, would potentially occur during proposed construction activities.

Air quality impacts from proposed construction activities would occur from combustive emissions due to the use of fossil fuel-fired construction equipment and fugitive dust (PM₁₀/particulate matter less than 2.5 microns in diameter [PM_{2.5}]) emissions due to the use of vehicles on bare soils. Proposed construction activities would produce emissions that would remain below applicable conformity emission significance thresholds. Any concurrent emissions-generating action that occurs in the vicinity of proposed construction activities would potentially contribute to the ambient impact of these emissions. However, since proposed construction would produce minor amounts of emissions, the combination of proposed construction and future project air quality impacts would not contribute to an exceedance of an ambient air quality standard. Implementation of recommended fugitive dust control measures would ensure that air emissions from proposed construction activities would produce less than significant cumulative air quality impacts.

Greenhouse Gases

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale.

Currently, there are no formally adopted or published NEPA thresholds for GHG emissions. On 18 February 2010, the CEQ released draft guidance for addressing climate change in NEPA documents (CEQ 2010). The draft guidance, which has been issued for public review and comment, recommends quantification of GHG emissions, and proposes a reference point of 25,000 metric tons of CO₂e emissions. The CEQ indicates that use of 25,000 metric tons of CO₂e emissions as a reference point would provide federal agencies with a useful indicator, rather than an absolute standard of significance, for agencies to provide action-specific evaluation of GHG emissions and disclosure of potential impacts.

Formulating such thresholds is problematic, as it is difficult to determine what level of proposed emissions would substantially contribute to global climate change. In the absence of formally-adopted thresholds of significance, this SEA compares GHG emissions that would occur from the proposed action with the 25,000 metric ton level, as well as comparing the net GHG emissions associated with the Proposed Action to the U.S. GHG baseline inventory of 2006 (USEPA 2008) to determine the relative increase in proposed GHG emissions.

Table 5.3-1 summarizes the annual GHG emissions associated with implementation of the Proposed Action. Appendix B presents estimates of GHG emissions generated by the Proposed Action. These data show that the CO₂e emissions associated with the Proposed Action would amount to approximately

0.0000138% of the total CO₂e emissions generated by the U.S. Emissions under the Proposed Action are also below the 25,000 metric tons of CO₂e level proposed in the draft NEPA guidance by the CEQ. Under the Proposed Action, cumulative impacts to global climate change would not be significant.

Table 5.3-1. Estimated GHG Emissions from Implementation of the Proposed Action

Scenario/Activity	Metric Tons per Year ¹			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Phase One Construction Emissions	196.89	0.02	0.18	252
Phase Two Construction Emissions	486.60	0.04	0.41	614
Phase Three Construction Emissions	87.48	0.01	0.07	110
TOTAL	770.97	0.07	0.66	976
Draft NEPA Threshold ³				25,000
U.S. 2006 Baseline Emissions (10 ⁶ metric tons) ⁴	-	-	-	7,054.2
Proposed Emissions as a % of U.S. Emissions	-	-	-	0.0000138

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

² Although Phase four construction activities would occur at a later date determined by NCTD/SANDAG, GHG emissions for Phase four are included in the Proposed Action total, since GHG emissions are cumulative by nature.

Source: ³CEQ 2010; ⁴USEPA 2008.

Although the Proposed Action would only cause negligible cumulative impacts associated with global climate change, this important topic warrants discussion of DON and USMC leadership in broad-based programs to reduce energy consumption and shift to renewable and alternative fuels, thereby reducing emissions of carbon dioxide and other GHGs.

Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was adopted in October 2009, and provides early strategic guidance to Federal agencies in the management of GHG emissions. The early strategy directs the agencies to increase renewable energy use to achieve general GHG emission reductions. According to the provisions of Executive Order 13514, Federal agencies will be required to develop a 2008 baseline for scope 1 and 2 GHG emissions, and to develop a percentage reduction target for agency-wide reductions of scope 1 and 2 GHG emissions by fiscal year 2020. As part of this effort, Federal agencies will evaluate sources of GHG emissions, and develop, implement, and annually update an integrated Strategic Sustainability Performance Plan that will prioritize agency actions based on lifecycle return on investment. The intent is to evaluate GHG emissions on a lifecycle basis and to identify feasibility of sustainability strategies on that basis. The Department of Defense is currently developing its Strategic Sustainability Performance Plan that will guide Marine Corps initiatives to reduce GHG emissions.

The Commandant of the Marine Corps' *Facilities Energy and Water Management Program Campaign Plan* (2009) declares the intent to implement measures to conserve energy and to reduce GHG emissions and dependence on foreign oil. The campaign plan identifies long-term goals to reduce energy intensity and increase the percentage of renewable electrical energy consumed. This plan requires base commanders to "evaluate the effectiveness of incorporating emerging technologies" including integrated photovoltaics, cool roofs, daylighting, ground source heat pumps, heat recovery ventilation, high efficiency chillers, occupancy sensors, premium efficiency motors, radiant heating, solar water heating, and variable air volume systems.

Marine Corps Installations West has undertaken a study to evaluate and address GHG emissions, documented in the draft *Greenhouse Gas Assessment for Marine Corps Installations West* (USMC 2009). The study provides the basis for recommended GHG management policies at Marine Corps Installations West.

5.3.6 Hazardous Materials and Wastes

Implementation of the Proposed Action would not result in significant impacts to hazardous materials and wastes. The Proposed Action and projects listed in Section 5.2 would require that construction contractors comply with all federal, state, and MCB Camp Pendleton requirements for use and storage of hazardous materials and hazardous wastes at the site and for proper off-site disposal of hazardous waste. In addition, construction contractors would be required to follow BMPs for hazardous materials and hazardous wastes associated with other construction activities. These requirements would reduce impacts of the Proposed Action and other past, present, and reasonably foreseeable projects to below a level of significance. Therefore, the Proposed Action, in conjunction with the projects described in Section 5.2, would not result in significant cumulative hazardous materials or wastes impacts.

5.4 CONCLUSION

Implementation of the Proposed Action would not result in significant impacts to any environmental resource area. The Proposed Action, in conjunction with the projects described in Section 5.2, would comply with established policies, regulations and directives to ensure that project-specific impacts are minimized or avoided. Therefore, cumulative impacts from the Proposed Action, in conjunction with other past, present, and reasonably foreseeable future actions, would not be significant.

CHAPTER 6

OTHER CONSIDERATIONS REQUIRED BY NEPA

6.1 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF NATURAL OR DEPLETABLE RESOURCES

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

Under the Proposed Action, construction would require the consumption of limited amounts of materials typically associated with construction (e.g., concrete, etc.). In addition, the use of construction vehicles at the locations would result in the consumption of additional fuel, oil, and lubricants. However, this is not considered a significant irreversible or irretrievable commitment of resources.

6.2 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM NATURAL RESOURCE PRODUCTIVITY

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

The Proposed Action would, reversibly, dedicate land and a small amount of other resources to a particular use for the life of the project. That land and those resources would not be available for other productive uses. However, these impacts are not significant. Therefore, implementation of the Proposed Action would not result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety or the general welfare of the public.

6.3 MEANS TO MITIGATE AND/OR MONITOR ADVERSE ENVIRONMENTAL IMPACTS

Implementation of the Proposed Action would not result in any significant adverse environmental impacts. Therefore, no mitigation and/or monitoring measures would be implemented, other than what has already been described in this SEA.

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

This SEA has determined that implementation of the Proposed Action would not result in any significant impacts; therefore, there are no probable adverse environmental effects that cannot be avoided or are not amenable to mitigation.

CHAPTER 7

REFERENCES

- ASM Affiliates, Inc. 2008. Archaeological testing near SDI-1074 and Historic Evaluation of Two Bridges for the Operations Access Points Green Beach Project (P-159A), MCB Camp Pendleton, California. ASM Affiliates, Inc. December.
- _____. 2011. Draft Historic Property Evaluation for the Supplemental Operations Access Points Green Beach Project (P-159A), MCB Camp Pendleton, California. January.
- Association of Engineering Geologists. 1973. Studies on the Geology and Geologic Hazards of the Greater San Diego Area, California. Ross, A. and Dowlen, R.J. (eds). A guidebook prepared for the May 1973 field trip with the San Diego Association of Geologists and the Association of Engineering Geologists.
- Byrd, B.F. 1996. Coastal Archaeology of Las Flores Creek and Horno Canyon, Camp Pendleton, California. ASM Affiliates, Inc. Prepared for U.S. Army Corps of Engineers, Los Angeles District, California.
- CARB. 2007. OFFROAD Emissions Model (EMFAC 2007), Emission Factors.
- _____. 2011a. Ambient Air Quality Standards. <http://www.arb.ca.gov/research/aqs/aqs2.pdf>. Accessed on 03 January.
- _____. 2011b. Almanac Emission Projection Data. 2010 Estimated Annual Average Emissions for San Diego Air Basin. <http://www.arb.ca.gov/app/emsmv/emssumcat.php>. Accessed on 03 January.
- _____. 2011c. State Nonattainment Designations. <http://www.arb.ca.gov/desig/adm/adm.htm>. Accessed on 03 January.
- _____. 2011d. Air Quality Data. Top 4 Summary: Select Pollutant, Years, and Area. <http://www.arb.ca.gov/adam/topfour/topfour1.php>. Accessed on 03 January.
- CEQ. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Council on Environmental Quality, Executive Office of the President. January.
- _____. 2010. Memorandum For Heads of Federal Departments and Agencies. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. 18 February.
- Department of Defense (DOD). 2010. Desk Reference for Implementing the Environmental Protection Agency (EPA) Final Rule for Mandatory Reporting of Greenhouse Gases (GHG MRR). 10 November.
- Hart. 1997. *Fault-rupture Hazard Zones in California*. Alquist-Priolo Special Study Zones Act of 1972 with Index to Special Study Zones Maps: Department of Conservation, Division of Mines and Geology, Special Publication 42.
- Howell, S.L. and B.E. Kus. 2009. Distribution, Abundance, and Breeding Activities of the Southwestern Willow Flycatcher at Marine Corps Base Camp Pendleton, California. 2009 Annual Report. Prepared for AC/S Environmental Security, Marines Corps Base Camp Pendleton. Western Ecological Research Center.
- Holland, R.F. 1986. Preliminary Descriptions of Terrestrial Natural Communities of California. State of California, Resources Agency.

- Intergovernmental Panel on Climate Change. 2007. Climate Change 2007-Synthesis Report. IPCC Fourth Assessment Report.
- Irwin, J.F., and D. L. Soltz. 1984. The natural history of the tidewater goby, *Eucyclogobius newberryi*, in the San Antonio and Shuman Creek systems, Santa Barbara County, California. Prepared for U.S. Fish and Wildlife Service, Contract No. 11310-0215.
- Lafferty, K.D., C.C. Swift, and R. F. Ambrose. 1996. Post-flood persistence of tidewater goby populations. Southern California Academy of Sciences Annual Meeting, May 1996.
- Lafferty, K.D., R. Swift, & R.F. Ambrose. 1999. Post-flood persistence and recolonization of endangered tidewater goby population. North American Journal of Fisheries Management 19:618-622.
- Lee, D.S., C.R. Gilbert, C.H. Hocutt, R.E. Jenkins, D.E. McAllister, and J.R. Stauffer, Jr. 1980. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History. p. 854.
- Lynn, S. and B.E. Kus. 2010. Distribution, Abundance, and Breeding Activities of the Least Bell's Vireo at Marine Corps Base Camp Pendleton, California. 2009 Annual Report. Prepared for AC/S Environmental Security, Marines Corps Base Camp Pendleton. Western Ecological Research Center.
- MCB Camp Pendleton. 2010a. Final Mitigation Plan for the Green Beach Operations Access Points (P-159A) Project. A Supplement to the ACOE Pre-Construction Notice. March.
- _____. 2010b. Geographic Information System (GIS) Data layers. AC/S Environmental Security.
- Moratto, M. 1984. *California Archaeology*. Academic Press, New York.
- Moyle, P.B. 1976. Inland fishes of California. University of California Press, Berkeley. p. 405.
- NAVFAC SW. 2010a. Final Environmental Assessment, Operations Access Points (P-159A Green Beach), MCB Camp Pendleton, California. January.
- _____. 2010b. Technical Memorandum for Project NO. P-159A, Operations Access Points, Green Beach, MCB Camp Pendleton, California. 18 November.
- NCTD. 2010. San Onofre Creek – Bridge 208.6 (Green Beach Bridge) Project Purpose and Need/Project Description submitted via email by Brett Rekola, Chief Rail Operations, NCTD to Jesse Martinez, NAVFAC SW Project Manager. 20 October.
- Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. 2008. Draft Vegetation Communities of San Diego County. March. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California", Robert F. Holland, Ph.D., October 1986.
- SANDAG. 2010. Project Study Report, San Onofre Creek – Br 208.6 Project (NAVFAC Green Beach Bridge). 25 May.
- SDCAPCD. 2007. Eight-Hour Ozone Attainment Plan for San Diego County. <http://www.sdapcd.org/planning/8-Hour-O3-Attain-Plan.pdf>. May.
- _____. 2011. Rules and Regulations. <http://www.sdapcd.org/rules/rules.html>. Accessed on 03 January.
- South Coast Air Quality Management District (SCAQMD). 2006. Final Methodology to Calculate Particulate Matter (PM)₁₀ and PM_{2.5} CEQA Significance Thresholds. October.
- Swift, C.C., J.L. Nelson, C. Maslow, and T. Stein. 1989. Biology and distribution of the tidewater goby, *Eucyclogobius newberryi* (*Pisces: Gobiidae*) of California. Natural History Museum of Los Angeles County, Contributions in Science 404. Pp. 1-19.

- TEC Inc. 2007. Plant Community Mapping, Operations Access Points, Green Beach (P-159A). Marine Corps Base, Camp Pendleton. January.
- _____. 2008. Rare Plant Survey Report Operations Access Points (P-159A) Green Beach, Marine Corps Base, Camp Pendleton. December.
- _____. 2010. Green Beach Locations Observed to be Washed Out Following December 2010 Storm Events. Personal communications C.Noddings, TEC Biologist. 23 December.
- USDA. 1973. *Soil Survey San Diego Area, California*. In cooperation with University of California Agricultural Experiment Station. U.S. Department of the Interior Bureau of Indian Affairs, DON. December 1973.
- _____. 2006. Soil Survey Geographic (SSURGO) Database for San Diego County, California. 18 April.
- USEPA. 1995. Compilation of Air Pollutant Emission Factors, AP-42, Volume I. Section 13.2.3, Heavy Construction Operations. <http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s02-3.pdf>. Accessed 10 January, 2011.
- _____. 2006. Compilation of Air Pollutant Emission Factors, AP-42, Volume I. Sections 13.2.1 and 13.2.2, Paved and Unpaved Roads. <http://www.epa.gov/ttn/chief/ap42/ch13/index.html>. Accessed 10 January 2011.
- _____. 2008. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006 – Executive Summary. Available at: http://www.epa.gov/climatechange/emissions/downloads/08_ES.pdf. Accessed on 10 January 2011.
- _____. 2011. Currently Designated Nonattainment Areas for All Criteria Pollutants. <http://www.epa.gov/air/oaqps/greenbk/index.html>. Accessed on 03 January.
- USFWS. 1986. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Least Bell's Vireo. Federal Register 51:16474-16481.
- _____. 1993a. Endangered and Threatened Wildlife and Plants; Final Rule Determining Threatened Status for the Coastal California Gnatcatcher. Federal Register 58:16742-16757.
- _____. 1994a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Least Bell's Vireo. Federal Register 59:4845-4867.
- _____. 1994b. Final rule. Tidewater goby. Federal Register 59: 5498. U. S. Fish and Wildlife Service.
- _____. 1995a. Biological Opinion: Endangered Species Act Consultation on the Proposed Riparian and Estuarine Programmatic Conservation Plan, MCB Camp Pendleton, San Diego County, California. 30 October.
- _____. 1995b. Endangered and Threatened Wildlife and Plants; Final Rule Determining Endangered Status for the Southwestern Willow Flycatcher. Federal Register 60:10694-10715.
- _____. 1997. Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Southwestern Willow Flycatcher. Federal Register 62:39129-39147.
- _____. 1998. Draft Recovery Plan for the Least Bell's Vireo. USFWS, Portland, Oregon.
- _____. 1999. Proposed Rule to Remove the Northern Populations of the Tidewater Goby From the List of Endangered and Threatened Wildlife. Federal Register 64 (121): 33816.

-
- _____. 2000a. Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Coastal California Gnatcatcher. Final Rule. Federal Register 65: 63680-63743.
- _____. 2000b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Tidewater Goby; Final Rule. Federal Register 65:69693-69717.
- _____. 2002. *Southwestern Willow Flycatcher Recovery Plan*. USFWS, Albuquerque, New Mexico.
- _____. 2003. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Coastal California Gnatcatcher (*Polioptila californica californica*) and Determination of Distinct Vertebrate Population Segment for the California Gnatcatcher (*Polioptila californica*); Proposed Rule. Federal Register 68: 20228-20312.
- _____. 2004. Biological Opinion (FWS-MCB Camp Pendleton-3775.3). Biological Opinion for the Tertiary Treatment Plant and Associated Facilities, Marine Corps Base Camp Pendleton, San Diego County, California. Prepared by Carlsbad Fish and Wildlife Office. 7 April.
- _____. 2005a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*). Federal Register 70: 60885-61009.
- _____. 2005b. Recovery Plan for the Tidewater Goby (*Eucyclogobius newberryi*). Pacific Region. Portland, Oregon.
- _____. 2007. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Coastal California Gnatcatcher (*Polioptila californica californica*); Final Rule. Federal Register 72:72010-72213.
- _____. 2008a. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Tidewater Goby (*Eucyclogobius newberryi*); Final Rule. Federal Register 73:5920-6006.
- _____. 2008b. Informal Consultation and Class II Concurrence for Operations Access Points P-159A (Green Beach), Marine Corps Base Camp Pendleton, San Diego County, California. Prepared by Carlsbad Fish and Wildlife Office. 20 October.
- U.S. Global Change Research Program. 2009. Global Climate Change Impacts in the United States. <http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf>. Accessed 04 January 2011.
- USMC. 2007. Integrated Natural Resources Management Plan Marine Corps Base and Marine Corps Air Station Camp Pendleton. Assistant Chief of Staff, Environmental Security. March.
- _____. 2009. Greenhouse Gas Assessment for Marine Corps Installations West.
- _____. 2010. *Marine Corps Base Camp Pendleton Environmental Operations Map*. Assistant Chief of Staff, Environmental Security MCB Camp Pendleton. September.
- Zemba, R., S. Hoffman, and J. Konecny. 2009. Light-footed Clapper Rail Management, Study and Propagation in California. State of California. The Resources Agency. Department of Fish and Game, Wildlife Branch.
-

CHAPTER 8

LIST OF PREPARERS AND CONTRIBUTORS

This Supplemental Environmental Assessment was prepared for, and under the direction of NAVFAC SW by TEC Inc. Members of the professional staff are listed below:

Project Management and Quality Assurance

Douglas Billings, Program/Project Manager, 25 years experience

B.S., Physical Geography/Geologic Sciences

Christine Davis, Deputy Project Manager, 11 years experience

M.S., Environmental Management

Technical Analysts

Selena Buoni, Environmental Analyst, 5 years experience

MPL (Master of Planning), Sustainable Land Use concentration

Christine Davis, Environmental Analyst, 11 years experience

M.S., Environmental Management

Mike Dungan, Senior Biologist, 28 years experience

Ph.D., Ecology and Evolutionary Biology

Clint Scheuerman, Biologist, 5 years experience

B.S., Biological Science

Melissa Tu, Biologist, 15 years experience

B.A., Environmental Science-Biology

GIS & Graphic Design

Jason Harshman, GIS Specialist, 5 years experience

B.S., Biological Science

Subcontractors

Mark Becker, ASM Affiliates (Cultural Resources Technical Report)

Contributors

Mark Anderson, USMC, MCB Camp Pendleton, AC/S ES

Manuel Alvarez, USMC, MCB Camp Pendleton, Public Works Office

Danielle Page, USMC, MCB Camp Pendleton, AC/S ES, Cultural Resources Management Head

Jim Dowd, USMC, MCB Camp Pendleton, Operations and Training

Carol Evans, USMC, MCB Camp Pendleton, AC/S ES, Wildlife Management Branch

Matthew Lorne, *USMC, MCB Camp Pendleton, AC/S ES, Land Management Branch*

Kelly Higelmire, *USMC, MCB Camp Pendleton, AC/S ES, Cultural Resources Management Branch*

Jesse Martinez, *NAVFAC Southwest, Project Manager/Community Planner*

Alert Owen, *NAVFAC Southwest*

Rob Barton, *Parsons/NAVFAC Southwest*

Justin Fornelli, *NCTD*

Cheryle Hodge, *SANDAG*

Erich Lathers, *BRG Consulting*

CHAPTER 9

LIST OF AGENCIES CONSULTED

U.S. Fish and Wildlife Service – *Jonathan Snyder, U.S. Fish and Wildlife Service*

California Coastal Commission – *Charles Lester, Acting Executive Director*

State Historic Preservation Office – *Milford Wayne Donaldson, FAIA, State Historic Preservation Office*

APPENDIX A

Agency Correspondence

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400
TDD (415) 597-5885



August 31, 2011

Jeffery S. Paull
Assistant Chief of Staff
Environmental Security
Marine Corps Base Camp Pendleton
ATTN: Mark Anderson
Box 555008
Camp Pendleton, CA 92055-5008

Re: **ND-022-11** U.S. Marine Corps Negative Determination, Modifications to previously-concurred-with Bridge Replacement and Military access improvements, Green Beach, south of San Onofre Creek, Marine Corps Base Camp Pendleton, San Diego Co.

Dear Mr. Paull:

On September 9, 2009, the Commission staff concurred with the Marine Corps' Negative Determination ND-040-09, which was for a bridge Replacement and military access improvements, from Green Beach east to just past the inland extent of I-5, just south of San Onofre Creek, in the northern portion of Marine Corps Base Camp Pendleton. The primary purpose of the project was (and remains) to facilitate Marine Corps troop and vehicular access beneath I-5 Old Highway 101, and to strengthen the railroad bridge.

Construction has not commenced, and the Marine Corps has submitted a subsequent negative determination to address several modifications to the previously-concurred-with project. The currently proposed project would be the demolition of the existing railroad trestle and replacement of approximately 220 ft. of the wooden trestle south of the existing steel bridge spanning San Onofre Creek. The original construction footprint was the same length (220 ft.), and the revised footprint is 270 ft. long. The revised footprint length extends 10 ft. to the north of the existing trestle, for track and utility work to tie into the steel and concrete bridge, and 40 ft. to the south to allow for the concrete wall abutment.

Several additional structural pilings are needed to assure adequate bridge strength (again, no work is proposed in the creek, and there will not be any pile driving – the piles are concrete, poured into holes drilled in the ground). A revetment will replace an existing timber wall on the southernmost portion of the bridge. In addition, the Marine Corps has assumed the “NEPA” responsibility to analyze any potential stoppages of rail access during the brief construction period, which the Marine Corps states would be at the lowest volume periods for rail service (and also that NCTD and SANDAG would coordinate with Amtrack to provide a bus bridge service during any closures).

The Marine Corps has coordinated with the U.S. Fish and Wildlife Service and the State Historic Preservation Officer, and determined that listed species and cultural issues have not changed for the modified project. The Marine Corps will continue to implement the same avoidance, mitigation and monitoring measures previously committed to, which we previously described as follows:


Erosion and sedimentation during construction will be controlled by implementation of a Storm Water Pollution Prevention Plan and Best Management Practices, and a post-construction landscaping and revegetation plan will provide permanent slope and soil stabilization. The project includes installation of a permanent stormwater treatment device at the southwestern corner of the new two-lane roadway to collect stormwater from the paved surfaces of the new roadway. While most of the proposed project will take place on currently developed land, the Marine Corps will implement conservation measures, terms, and conditions contained in a Biological Opinion from the U.S. Fish and Wildlife Service to avoid and minimize project impacts on federally listed species and other terrestrial species and habitat.

Although the project area does not contain elements contributing to archaeological site SDI-1074, a professional archaeologist and Native American representative will monitor all construction activity to ensure that the project does not adversely affect cultural resources that may be discovered during construction. The Marine Corps initiated consultation with the State Historic Preservation Officer (SHPO) earlier this year regarding the Corps' determination that San Onofre Railroad Trestle Bridge over San Onofre Creek is not eligible for listing in the National Register of Historic Places. Project construction will take place primarily underneath existing transportation superstructures and the widened and realigned roadways will not adversely affect any public views of the shoreline from I-5.

As we previously noted, the project would not adversely affect public access or recreation as Marine Corps Base Camp Pendleton is closed to the general public due to military security restrictions. Assuming the bus service and low use period for rail stoppages measures are implemented, the project would avoid effects on coastal recreation using the rail corridor.

Under the federal consistency regulations (Section 930.35), a negative determination can be submitted for an activity "which is the same as or similar to activities for which consistency determinations have been prepared in the past." The proposed modifications do not raise any new coastal zone resources impact issues not already addressed in our previous concurrence, and we **agree** that the proposed activity will not adversely affect coastal zone resources and is similar to the previous negative determination with which we have concurred. We therefore **concur** with your negative determination made pursuant to 15 CFR Section 930.35 of the NOAA implementing regulations. Please contact Mark Delaplaine of the Commission staff at (415) 904-5289 if you have any questions regarding this matter.

Sincerely,

(for) 
CHARLES LESTER
Acting Executive Director

cc: San Diego District Office

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

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
caishpo@parks.ca.gov
www.ohp.parks.ca.gov



September 27, 2011

Reply in Reference To: USMC090409A

Danielle Page
Head Cultural Resource Management Branch
Assistant Chief of Staff, Environmental Security
United States Marine Corps
Box 555008
Camp Pendleton, CA 92055-5008

Re: Section 106 Consultation for Project Amendment, Operations Access Point Green Beach
Project, Camp Pendleton, San Diego County, CA

Dear Ms. Page:

Thank you for continuing 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.

The USMC previously received concurrence from my office that the above referenced project will not adversely affect historic properties and are now amending the APE to provide for earthen retaining structures, concrete abutment, additional track work and an expanded bridge structure. An archeological survey of the expanded APE has been submitted in support of the USMC's determination that these project changes do not alter the original finding of no adverse effect with conditions. After reviewing this information I have the following comments:

- 1) I concur that the modified APE has been properly determined and documented pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16(d).
- 2) In consideration of your intention to adhere to previously agreed upon conditional measures (30 October 2009), I concur that your determination of No Adverse Effect with conditions remains appropriate for this project pursuant to 36 CFR Part 800.5(b) and that the documentation supporting this finding has been provided pursuant to 36 CFR Part 800.11(d).
- 3) 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, please contact Ed Carroll of my staff at your earliest convenience a (916) 445-7006, or email at ecarroll@parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

From: [Jonathan D Snyder@fws.gov](mailto:Jonathan_D_Snyder@fws.gov)
To: [Sullivan CIV Sherri](#);
cc: [Evans CIV Carol A](#); [Berry CIV William H](#);
Subject: Re: FWS-MCBCP-09BO252-0910880 notification of changes to the Description of the Proposed Action
Date: Wednesday, September 07, 2011 14:52:25
Attachments: [GB July SEA Figure 2-1.pdf](#)
[GB July SEA Figure 3 3-1.pdf](#)
[GB July SEA Fig1-2.pdf](#)
[GB July SEA Fig1-3.pdf](#)

Sherri,

My understanding of the proposed project change is that it will only impact the area under the railway trestle and will not result in additional impacts to coastal sage scrub, riparian vegetation, or other listed species' habitat. Construction activity may occur during the vireo and gnatcatcher breeding season, and there may be construction activity at night, but these possibilities were addressed in our October 20, 2009, correspondence. Therefore, the proposed change is not anticipated to have any additional effects to federally listed species, beyond those already analyzed in our October 20, 2009, informal consultation/Riparian BO class II concurrence letter.

Thank you for your coordination.

Sincerely,
Jonathan

Jonathan Snyder
U.S. Fish and Wildlife Service
6010 Hidden Valley Road, Suite 101
Carlsbad, CA 92011 (760)
431-9440 x307
jonathan_d_snyder@fws.gov

"Sullivan CIV Sherri" <sherri.sullivan@usmc.mil>

08/25/2011 07:09 PM To

"Jonathan Snyder" <jonathan_d_snyder@fws.gov>

cc

"Berry CIV William H" <william.h.berry@usmc.mil>, "Sullivan CIV Sherri" <sherri.sullivan@usmc.mil>, "Evans CIV Carol A" <carol.a.evans@usmc.mil>

Subject

FWS-MCBCP-09BO252-0910880 notification of changes to the Description of the Proposed Action

Jonathan,

Marine Corps Base Camp Pendleton (Base) is notifying you of a change in the project description to the Green Beach Operations Access Points (P-159A) project (FWS-MCBCP-09BO252-0910880, FWS-MCBCP-09BO252-09TA0796). This project was placed on hold in 2010 until more detailed information for a proposed bridge design/construction became available. The demolition and replacement of an existing timber trestle bridge requires construction activities outside the original project footprint analyzed in the 2009 project plans. The Base has determined that there are no additional impacts to listed species or occupied habitats from the Final March 2009 Biological Assessment (Figure 3 3-1).

Changes to the Proposed Action consist of demolishing the existing railway trestle and constructing a 220 ft (67 m) bridge system with four 55 ft (16.8 m) spans within the North County Transit District right-of-way (Figures 1-2, 1-3). The bridge system will be supported by five bents with two cast-in-drilled-hole (CIDH) concrete piles per bent for a total of ten CIDH piles. This design meets the objectives for both USMC and NCTD. Implementation will begin this winter and be completed by 2012, and take up to 12 months to complete. Heavy equipment that will be used for the demolition and construction of the railway include earth movers and/or excavators, CIDH pile drills, cranes, and material haulers. Span by span demolition of the timber trestle bridge would occur concurrently with installation of the pier caps, superstructure girders, ballast, ties, and the new track to connect to the adjacent track. The existing timber trestles will be cut to below ground level. The bridge deck and track replacement actions will take place during several weekends from 10:30 pm on Friday until 4:00 am on Monday to minimize disruption in railway transit.

A new retaining wall will be installed at the southern-most abutment to replace the existing timber wall system (Figure 2-1). To expedite construction and avoid lengthy railway track closures, it is likely that the retaining wall system would consist of a soldier pile wall, which would require limited excavation compared to a cast-in place retaining wall. A soldier pile wall is a retaining wall constructed by installing driven or cast vertical piles or caissons with horizontal lagging beams spanning between the piles to retain the soil behind the lagging. These walls can be constructed in either cut or fill situations, and can be constructed in

a top-down type manner limiting the need for excessive excavation and backfilling on the retained soil side.

Construction of a new access road and other roadway work within the NCTD easement area/project footprint are necessary to link with the Green Beach Operations access point project (P-159A). Temporary closures of the existing access road would occur during construction. Detouring of training vehicles, personal vehicles, and pedestrian traffic will occur until the new access road has been completed.

Conservation Measures will be implemented consistent with the Informal Consultation and Class II Concurrence for Operations Access Points P-159A (Green) Beach FWS-MCBCP-09B0252-09I0880.

This project has been assigned a tracking number 20020013A. Thank you for your attention to this matter. If you have questions concerning this project, please contact Carol Evans at (760) 763-8540 carol.a.evans@usmc.mil or Sherri Sullivan at (760) 725-9729 sherri.sullivan@usmc.mil for further information.

Respectfully,

Sherri Sullivan

[illegible]

Sherri Sullivan

Wildlife Mgmt Branch Head

AC/S Environmental Security
Marine Corps Base, Bldg. 26048 Box 555008
Camp Pendleton, CA 92055-5008

sherri.sullivan@usmc.mil

760.725.9729

<<<< NEW PHONE #

[illegible]



a) View of Green Beach Bridge South Trestle Pile Bents 1 to 5



b) View of Green Beach Bridge South Trestle Pile Bents 7 to 13

Figure 1-2
Views of the Existing Green Beach Bridge (San Onofre Creek Bridge 208.6)



a) View of the North Edge of the Green Beach Bridge Replacement



b) View of the South Edge of the Green Beach Bridge Replacement
(location of the proposed retaining wall)

Figure 1-3
Boundaries of the Green Beach Bridge Replacement

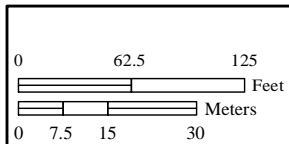
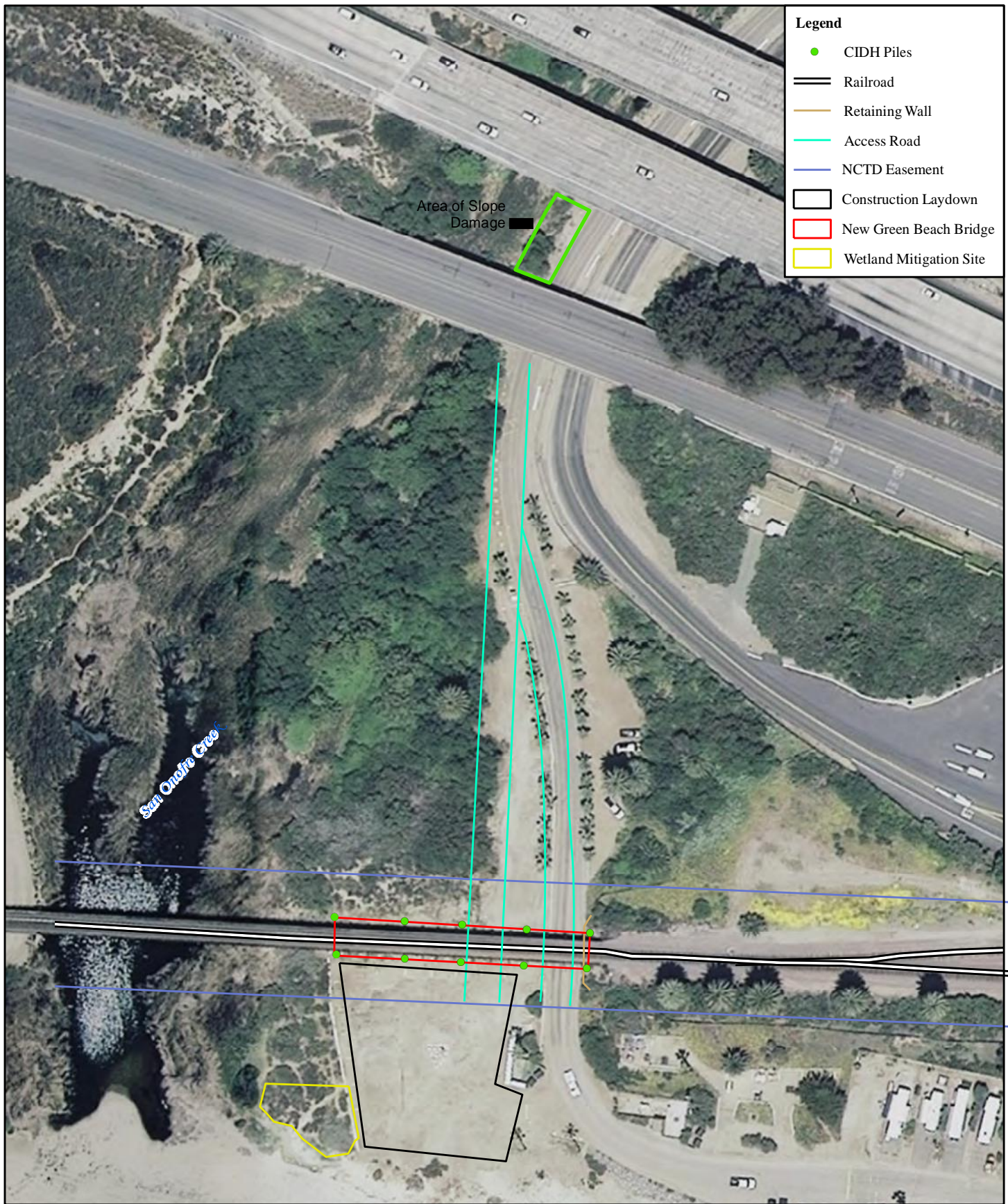


Figure 2-1
Proposed Action - Aerial View
Green Beach



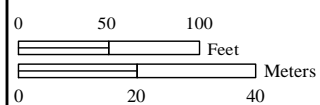
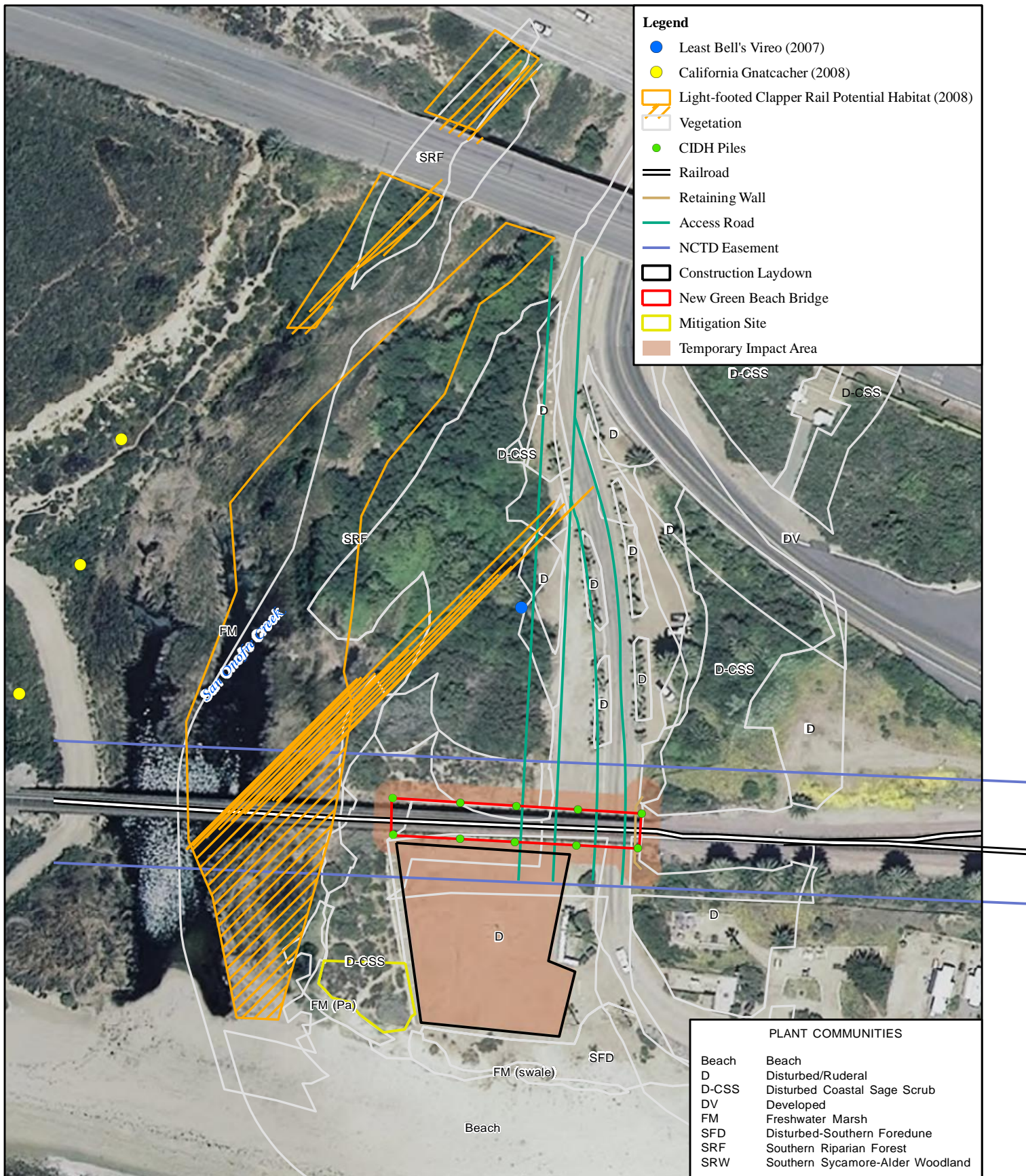


Figure 3.3-1
Biological Resources Within and in the Vicinity of the
Green Beach Bridge Project Area



APPENDIX B

Record of Non-Applicability (RONA) and Air Quality Data



UNITED STATES MARINE CORPS
MARINE CORPS BASE
BOX 555010
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENVSEC
AUG 31 2011

MEMORANDUM FOR THE RECORD

From: Commanding Officer
To: Assistant Chief of Staff, Environmental Security
Subj: RECORD OF NON-APPLICABILITY (RONA) FOR NEPA 20020013A;
GREEN BEACH OPERATIONS ACCESS POINTS (P-159A), CAMP
PENDLETON
Ref: (a) U.S. Environmental Protection Agency, Determining
Conformity of General Federal Actions to State or
Federal Implementation Plans; Final Rule, published
in the Federal Register on 30 November 1993 (40 CFR
Parts 6, 51, and 93)
(b) U.S. Environmental Protection Agency, Revisions to
the General Conformity Regulations; Final Rule,
published in the Federal Register on 5 April 2010
(40 CFR Parts 51 and 93)
(c) OPNAVINST 5090.1C (Appendix F)
Encl: (1) Camp Pendleton Operations Access Points Green Beach
(P-159A) Emissions Analysis for Clean Air Act
Conformity

1. References (a), (b), and (c) provide implementing guidance for documenting Clean Air Act (CAA) Conformity Determination requirements. The General Conformity Rule applies to federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants.
2. The Proposed Action would occur within the San Diego Air Basin (SDAB) portion of Marine Corps Base, Camp Pendleton. This portion of the SDAB is currently in non-attainment of the 8-hour ozone (O₃) NAAQS and is a maintenance area for carbon monoxide (CO) NAAQS. The SDAB is in attainment of the NAAQS for all other criteria pollutants. Therefore, only project emissions of CO and O₃ (or its precursors, volatile organic compounds [VOCs])

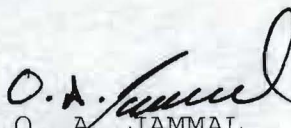
FOR OFFICIAL USE ONLY

Subj: RECORD OF NON-APPLICABILITY (RONA) FOR NEPA 20020013A;
GREEN BEACH OPERATIONS ACCESS POINTS (P-159A), CAMP
PENDLETON

and oxides of nitrogen [NO_x]) were analyzed for conformity rule applicability. The annual *de minimis* threshold levels for this region are 100 tons of VOC, NO_x, and CO. Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* threshold levels.

3. An emissions analysis for Green Beach Operations Access Points (P-159A), Camp Pendleton is presented in the enclosure. *De minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action and a formal Conformity Determination is not considered necessary.

4. To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that implementation of the Proposed Action does not require a formal CAA Conformity Determination.


O. A. JAMMAL
Chief of Staff

Copy to:
Files

CAMP PENDLETON OPERATIONS ACCESS POINTS GREEN BEACH (P-159A) EMISSIONS ANALYSIS FOR CLEAN AIR ACT CONFORMITY

INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule*, in the Federal Register on 30 November 1993 (40 CFR Parts 6, 51, and 93). USEPA published *Revisions to the General Conformity Regulations; Final Rule*, in the Federal Register on 5 April 2010 (40 CFR Parts 51 and 93). The U.S. Navy published *Interim Guidance on Compliance with the Clean Air Act (CAA) General Conformity Rule* in Appendix F, OPNAVINST 5090.1C, dated 30 October 2007, which has been used by the United States Marine Corps (USMC) as interim USMC Conformity guidance. These publications provide implementing guidance to document Clean Air Act Conformity Determination requirements.

Regulations within the General Conformity Rule 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]).

The General Conformity Rule applies to federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants. Former non-attainment areas that have attained a NAAQS are designated as maintenance areas. Emissions of pollutants for which an area is in attainment are exempt from conformity analyses.

The Proposed Action would occur within the San Diego Air Basin (SDAB) portion of the Marine Corps Base (MCB) Camp Pendleton. This portion of the SDAB is currently in non-attainment of the 8-hour ozone (O_3) NAAQS and is a maintenance area for carbon monoxide (CO) NAAQS. The SDAB attains the NAAQS for all other criteria pollutants. Therefore, only project emissions of O_3 (or its precursors, volatile organic compounds [VOCs] and oxides of nitrogen [NO_x]) and CO are analyzed for conformity rule applicability.

The annual *de minimis* levels for this region are 100 tons of VOC, NO_x , and CO, as listed in Table 1. Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels (40 CFR Part 1, Section 51.853[b]).

Enclosure (1)

**Table 1. Conformity *de minimis* Levels for Criteria Pollutants
in the San Diego Air Basin**

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

PROPOSED ACTION

Action Proponent: USMC

Location: MCB Camp Pendleton.

Proposed Action Name: Operations Access Points (P-159A) Green Beach Supplemental Environmental Assessment (SEA), MCB Camp Pendleton

Proposed Action Summary: The Proposed Action would involve the replacement of the Green Beach Trestle Bridge with a new bridge system that would facilitate an increase in capacity and reliability by allowing trains to pass in the congested rail corridor. The P-159A Environmental Assessment (EA) prepared in January 2010 described the potential environmental consequences that would result from the proposed construction and modification of new and existing transit and maneuver corridors. A Record of Non-Applicability (RONA) for Clean Air Act Conformity and a Finding of No Significant Impact (FONSI) for the P-159A EA were signed on 08 January 2010. Since preparation of the P-159A EA, more detailed information for proposed bridge design/construction and the access road within the North County Transit District rail easement or right-of-way has become available, necessitating an expanded analysis of these project components. Major bridge replacement construction efforts would be restricted to within the railway easement; however, expected track work and bridge substructure work is expected to occur outside the limits of the previously analyzed project footprint in the P-159A EA. Therefore, this RONA focuses only on the proposed bridge design/construction, associated retaining walls, and access road within this project footprint.

Air Emissions Summary: Emission sources associated with the Proposed Action involve construction activities and no changes in operations for current sources of air emissions are proposed. Annual emissions from all construction activities were calculated by assuming that all activities for Phases one, two, and three would occur within one 12-month period. Estimated construction emissions due to implementation of the Proposed Action are shown in Table 2. Based on the air quality analysis for the Proposed Action, the maximum estimated emissions would be below conformity *de minimis* levels (Table 2).

**Table 2. Estimated Emissions Resulting from
Implementation of the Proposed Action**

Estimated Emissions Per Construction Phase	Emissions ¹ (tons/year)					
	CO	VOCs	NO _x	SO _x	PM ₁₀	PM _{2.5}
Phase One Construction Emissions	1.11	0.24	2.03	0.00	0.34	0.10
Phase Two Construction Emissions	2.48	0.54	4.75	0.01	0.38	0.24
Phase Three Construction Emissions	0.52	0.11	0.82	0.00	0.08	0.05
Subtotal	4.11	0.89	7.60	0.01	0.80	0.39
<i>de minimis</i> threshold ²	100	100	100	NA	NA	NA
Exceeds <i>de minimis</i> threshold?	No	No	No	No	No	No

Note: ¹ SDAB is a basic nonattainment area for the 8-hour O₃ NAAQS (VOCs and NO_x are precursors to the formation of O₃), is a maintenance area for CO NAAQS, and is in attainment of the NAAQS for all other criteria pollutants.

² *de minimis* thresholds are developed from SDCAPCD major source thresholds; *de minimis* thresholds are not applicable to NAAQS attainment areas (i.e., SO₂, PM₁₀ and PM_{2.5}).

Sources: California Air Resources Board 2011c; USEPA 2011.

Affected Air Basin: San Diego Air Basin

ATTAINMENT AREA STATUS AND EMISSIONS EVALUATION CONCLUSION

The SDAB is a basic nonattainment area for the 8-hour O₃ NAAQS; VOCs and NO_x are precursors to the formation of O₃. The SDAB is considered a maintenance area for the CO NAAQS.

Emissions associated with the Proposed Action have been estimated using data presented in Chapter 3 of the SEA, general air quality assumptions, and emission factors compiled from the following sources: *OFFROAD Emission Factors and CARB EMFAC2007 Model* (CARB 2007). Emissions were then compared with *de minimis* thresholds for the SDAB.

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. Therefore, formal Conformity Determination procedures are not required.

Green Beach Operations Access Points (P-159A) Supplemental EA

Air Quality Emissions Summary

PROPOSED ACTION: CONSTRUCTION EMISSIONS SUMMARY

Estimated Emissions Per Construction Phase	Emissions (tons/year)							
	CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO ₂	CH ₄
Phase One Construction Emissions	1.11	0.24	2.03	0.00	0.34	0.10	217.04	0.02
Phase Two Construction Emissions	2.48	0.54	4.75	0.01	0.38	0.24	536.39	0.05
Phase Three Construction Emissions	0.52	0.11	0.82	0.00	0.08	0.05	96.43	0.01
TOTAL =	4.11	0.89	7.60	0.01	0.80	0.39	849.86	0.08

PROPOSED ACTION: GHG EMISSIONS SUMMARY

Estimated GHG Emissions Per Construction Phase	Emissions (Metric tons/year)			
	CO ₂	CH ₄	N ₂ O	CO _{2e}
Phase One Construction Emissions	196.89	0.02	0.18	252
Phase Two Construction Emissions	486.60	0.04	0.41	614
Phase Three Construction Emissions	87.48	0.01	0.07	110
TOTAL =	770.97	0.07	0.66	976

Notes:

Conversion to Metric Tons = 1 short ton = 0.90718474 metric tons

N₂O = NO_x * 0.095

CO_{2e} = (CO₂*1)+ (CH₄*21)+(N₂O*310)

Construction Equipment Emissions

Phase One: Construction of the New Bridge Substructure

Note: Phase 1 construction duration is assumed to be 3 months total.

Construction	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day							Emissions, tons/year								
Equipment				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	2	4	3	4.26	1.25	7.50	0.01	0.69	0.61	595.38	0.11	0.17	0.05	0.29	0.00	0.03	0.02	23.22	0.00
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	3	2.19	0.69	6.68	0.01	0.36	0.32	684.16	0.06	0.09	0.03	0.26	0.00	0.01	0.01	26.68	0.00
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	3	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.08	0.02	0.24	0.00	0.01	0.01	24.43	0.00
Crane	Diesel	399	43	2.44	0.63	6.27	0.006	0.243	0.21627	568.3	0.053	1	1	3	0.92	0.24	2.37	0.00	0.09	0.08	214.96	0.02	0.04	0.01	0.09	0.00	0.00	0.00	8.38	0.00
Rough Terrain Forklift	Diesel	93	60	4.14	1.28	7.55	0.007	0.69	0.6141	568.3	0.115	1	1	3	0.51	0.16	0.93	0.00	0.08	0.08	69.91	0.01	0.02	0.01	0.04	0.00	0.00	0.00	2.73	0.00
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	4	3	1.85	0.50	5.19	0.01	0.19	0.17	479.91	0.04	0.07	0.02	0.20	0.00	0.01	0.01	18.72	0.00
Drill Rig	Diesel	291	75	3.16	0.7	6.71	0.006	0.271	0.24119	568.3	0.063	1	4	3	6.08	1.35	12.91	0.01	0.52	0.46	1093.78	0.12	0.24	0.05	0.50	0.00	0.02	0.02	42.66	0.00
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	2	3	0.05	0.01	0.07	0.00	0.00	0.00	8.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	3	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.07	0.02	0.14	0.00	0.01	0.01	9.94	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	3	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.01	0.00	0.04	0.00	0.00	0.00	4.10	0.00
TOTAL =														20.04	5.51	46.28	0.05	2.62	2.34	4133.38	0.49	0.78	0.21	1.81	0.00	0.10	0.09	161.20	0.02	

Phase Two: Demolition of Existing Bridge & Construction of New Bridge

Note: Phase 2 construction duration is assumed to be 6 months total.

Construction	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment	Hrs/day	Months	Emissions, lbs/day							Emissions, tons/year								
Equipment				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4
Tractor/Loader/Backhoe	Diesel	108	55	4.07	1.19	7.16	0.007	0.654	0.58206	568.3	0.108	1	4	6	2.13	0.62	3.75	0.00	0.34	0.30	297.69	0.06	0.17	0.05	0.29	0.00	0.03	0.02	23.22	0.00
Dump Truck	Diesel	479	57	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	2	4	6	8.76	2.74	26.73	0.03	1.42	1.26	2736.62	0.25	0.68	0.21	2.08	0.00	0.11	0.10	213.46	0.02
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	6	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.16	0.05	0.48	0.00	0.03	0.02	48.86	0.00
Bulldozers	Diesel	357	59	4.25	0.83	7.51	0.006	0.32	0.2848	568.3	0.075	1	2	6	3.95	0.77	6.97	0.01	0.30	0.26	527.79	0.07	0.31	0.06	0.54	0.00	0.02	0.02	41.17	0.01
Crane	Diesel	399	43	2.44	0.63	6.27	0.006	0.243	0.21627	568.3	0.053	1	1	6	0.92	0.24	2.37	0.00	0.09	0.08	214.96	0.02	0.07	0.02	0.18	0.00	0.01	0.01	16.77	0.00
Rough Terrain Forklift	Diesel	93	60	4.14	1.28	7.55	0.007	0.69	0.6141	568.3	0.115	1	1	6	0.51	0.16	0.93	0.00	0.08	0.08	69.91	0.01	0.04	0.01	0.07	0.00	0.01	0.01	5.45	0.00
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	6	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.14	0.05	0.27	0.00	0.02	0.02	19.89	0.00
Concrete Truck/Pump Truck	Diesel	210	20	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	2	6	0.34	0.11	1.03	0.00	0.05	0.05	105.24	0.01	0.03	0.01	0.08	0.00	0.00	0.00	8.21	0.00
TOTAL =														20.45	5.86	51.38	0.05	2.92	2.60	4833.65	0.53	1.60	0.46	4.01	0.00	0.23	0.20	377.02	0.04	

Phase Three: Roadwork Construction

Note: Phase 3 construction duration is assumed to be 3 months total.

Construction Equipment	Fuel	HP	Load Factor	Emission Factors, g/bhp-hr								No of Equipment				Emissions, lbs/day								Emissions, tons/year							
				CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	Hrs/day	Months	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4		
Water Truck	Diesel	250	50	1.82	0.57	5.55	0.006	0.295	0.26255	568.3	0.051	1	4	3	2.01	0.63	6.12	0.01	0.33	0.29	626.45	0.06	0.08	0.02	0.24	0.00	0.01	0.01	24.43	0.00	
Excavator	Diesel	168	57	2.19	0.59	6.15	0.006	0.229	0.20381	568.3	0.053	1	2	3	0.92	0.25	2.60	0.00	0.10	0.09	239.95	0.02	0.04	0.01	0.10	0.00	0.00	0.00	9.36	0.00	
Compactor	Diesel	8	43	3.47	0.68	4.33	0.009	0.274	0.24386	568.3	0.061	1	4	3	0.11	0.02	0.13	0.00	0.01	0.01	17.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.67	0.00	
Compressor	Diesel	106	48	4.08	1.32	7.76	0.007	0.686	0.61054	568.3	0.119	1	4	3	1.83	0.59	3.48	0.00	0.31	0.27	254.99	0.05	0.07	0.02	0.14	0.00	0.01	0.01	9.94	0.00	
Paver	Diesel	100	62	4.4	1.5	8.75	0.007	0.759	0.67551	568.3	0.135	1	4	3	2.41	0.82	4.78	0.00	0.41	0.37	310.72	0.07	0.09	0.03	0.19	0.00	0.02	0.01	12.12	0.00	
TOTAL =														7.27	2.31	17.11	0.02	1.15	1.03	1449.35	0.21	0.28	0.09	0.67	0.00	0.04	0.04	56.52	0.01		

Construction Truck Emissions

Phase One: Construction of the New Bridge Substructure

Note: Phase 1 construction duration is assumed to be 3 months total.

Proj. Construction Trucks	No. of Trucks	VMT		CO Running Exhaust (g/mi)	NO _x Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SO _x Running Exhaust (g/mi)	PM10			PM2.5			CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
		Speed (mph)	(mi/vehicle- day)					Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)		
Heavy-duty diesel trucks	3	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4	CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4
1.67	4.55	0.33	0.01	0.21	0.18	527.17	0.02	0.08	0.20	0.02	0.00	0.01	0.01	23.72	0.00
TOTAL =								0.08	0.20	0.02	0.00	0.01	0.01	23.72	0.00

Phase Two: Demolition of Existing Bridge & Construction of New Bridge

Note: Phase 2 construction duration is assumed to be 6 months total.

Proj. Construction Trucks	No. of Trucks	VMT		CO Running Exhaust (g/mi)	NO _x Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SO _x Running Exhaust (g/mi)	PM10			PM2.5			CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
		Speed (mph)	(mi/vehicle- day)					Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)		
Heavy-duty diesel trucks	5	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4	CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4
2.78	7.59	0.56	0.01	0.34	0.30	878.62	0.03	0.25	0.68	0.05	0.00	0.03	0.03	79.08	0.00
TOTAL =								0.25	0.68	0.05	0.00	0.03	0.03	79.08	0.00

Phase Three: Roadwork Construction

Note: Phase 3 construction duration is assumed to be 3 months total.

Proj. Construction Trucks	No. of Trucks	VMT		CO Running Exhaust (g/mi)	NO _x Running Exhaust (g/mi)	VOC Running Exhaust (g/mi)	SO _x Running Exhaust (g/mi)	PM10			PM2.5			CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)
		Speed (mph)	(mi/vehicle- day)					Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)		
Heavy-duty diesel trucks	2	27	40	6.303	17.209	1.262	0.019	0.713	0.036	0.028	0.656	0.009	0.012	1992.669	0.059
Emissions, lbs/day								Emissions, tons/year							
CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4	CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4
1.11	3.04	0.22	0.00	0.14	0.12	351.45	0.01	0.05	0.14	0.01	0.00	0.01	0.01	15.82	0.00
TOTAL =								0.05	0.14	0.01	0.00	0.01	0.01	15.82	0.00

Unpaved Road Emissions	PM10	PM2.5
E = k(s/12) ^a a(W/3) ^b	k	1.5 0.15
Assume s = 8.5	a	0.9 0.9
Assume W = 10	b	0.45 0.45
Assume 5 miles of travel per vehicle per day		
Emission Factor	1.890604	0.18906
Control Efficiency	61%	61%
Emissions, lbs/day	0.757834	0.06603
Phase 1 (emissions, tons/year) =	0.03	0.00

Unpaved Road Emissions	PM10	PM2.5
E = k(s/12) ^a a(W/3) ^b	k	1.5 0.15
Assume s = 8.5	a	0.9 0.9
Assume W = 10	b	0.45 0.45
Assume 5 miles of travel per vehicle per day		
Emission Factor	1.890604	0.18906
Control Efficiency	61%	61%
Emissions, lbs/day	1.263056	0.11005
Phase 2 (emissions, tons/year) =	0.11	0.01

Unpaved Road Emissions	PM10	PM2.5
E = k(s/12) ^a a(W/3) ^b	k	1.5 0.15
Assume s = 8.5	a	0.9 0.9
Assume W = 10	b	0.45 0.45
Assume 5 miles of travel per vehicle per day		
Emission Factor	1.890604	0.18906
Control Efficiency	61%	61%
Emissions, lbs/day	0.505223	0.04402
Phase 3 (emissions, tons/year) =	0.02	0.00

Construction Worker Personal Vehicle Emissions

Phase One: Construction of the New Bridge Substructure

Note: Phase 1 construction duration is assumed to be 3 months total.

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO _x		VOCs							
				Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)		
Light-duty truck, catalyst	20	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054		
Vehicle Class	SO _x		PM10				PM2.5				CO2		CH4		
	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046	
Emissions, lbs/day							Emissions, tons/year								
CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4	CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4
5.65	0.53	0.26	0.01	0.06	0.03	713.7	0.05	0.25	0.02	0.01	0.00	0.00	0.00	32.11	0.00
TOTAL =							0.25	0.02	0.01	0.00	0.00	0.00	0.00	32.11	0.00

Phase Two: Demolition of Existing Bridge & Construction of New Bridge

Note: Phase 2 construction duration is assumed to be 6 months total.

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO _x		VOCs							
				Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)		
Light-duty truck, catalyst	25	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054		
Vehicle Class	SO _x		PM10				PM2.5				CO2		CH4		
	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046	
Emissions, lbs/day							Emissions, tons/year								
CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4	CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4
7.07	0.66	0.33	0.01	0.08	0.04	892.1	0.06	0.64	0.06	0.03	0.00	0.01	0.00	80.29	0.01
TOTAL =							0.64	0.06	0.03	0.00	0.01	0.00	80.29	0.01	

Phase Three: Roadwork Construction

Note: Phase 3 construction duration is assumed to be 3 months total.

Vehicle Class	No. POVs	Speed (mph)	VMT (mi/vehicle-day)	CO		NO _x		VOCs							
				Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)		
Light-duty truck, catalyst	15	33	40	2.924	11.289	0.284	0.56	0.055	0.816	0.183	0.024	0.047	0.054		
Vehicle Class	SO _x		PM10				PM2.5				CO2		CH4		
	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start) ^a	Running Exhaust (g/mi)	Start-Up (g/start) ^a	
Light-duty truck, catalyst	0.004	0.002	0.013	0.016	0.008	0.013	0.011	0.014	0.002	0.005	399.538	203.967	0.027	0.046	
Emissions, lbs/day							Emissions, tons/year								
CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4	CO	NO _x	VOCs	SO _x	PM10	PM2.5	CO2	CH4
4.24	0.39	0.20	0.01	0.05	0.02	535.2	0.04	0.19	0.02	0.01	0.00	0.00	0.00	24.09	0.00
TOTAL =							0.19	0.02	0.01	0.00	0.00	0.00	24.09	0.00	