



Draft Environmental Assessment

ESTABLISHMENT AND USE OF TRAINING SUPPORT AREAS IN THE BOB STUMP TRAINING RANGE COMPLEX MARINE CORPS AIR STATION, YUMA

August 2021





#### Draft

#### Environmental Assessment ESTABLISHMENT AND USE OF TRAINING SUPPORT AREAS IN THE BOB STUMP TRAINING RANGE COMPLEX MARINE CORPS AIR STATION YUMA, ARIZONA

Action Proponent:	United States Marine Corps
Title of Proposed Action:	Establishment and Use of Training Support Areas in the Bob Stump Training Range Complex
Project Location:	Imperial and Riverside Counties, California and Yuma County, Arizona
Document Type:	Environmental Assessment

#### Abstract

This Environmental Assessment (EA) has been prepared by the United States (U.S.) Marine Corps (USMC) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h), as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508); Department of the Navy procedures for implementing NEPA (32 CFR § 775); and Marine Corps Order 5090.2, dated 11 June 2018, *Environmental Compliance and Protection Program*. The USMC proposes to establish and use landing zones, an assault landing zone, drop zones, and an artillery firing area at the two tactical ranges within the Bob Stump Training Range Complex: the Chocolate Mountain Aerial Gunnery Range and the Barry M. Goldwater Range-West. Implementation of the Proposed Action is essential to accomplishing critical Marine Corps and Naval Tactical Training Procedures, Training and Readiness Codes, and Large Force Exercises to support current and emerging contingency and wartime requirements. The USMC considered multiple potential action alternatives for implementing the Proposed Action; however, after careful consideration, none of the proposed Action and the No-Action Alternative in detail.

**Prepared By:** 

USMC

**Point of Contact:** 

**Department of the Navy** Naval Facilities Engineering Systems Command Attention: Jesse Martinez, Senior NEPA Planner/Project Manager 750 Pacific Highway, Floor 12 San Diego, California 92132-0058

#### August 2021

## **EXECUTIVE SUMMARY**

The United States (U.S.) Marine Corps (USMC) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h), as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508); Department of the Navy procedures for implementing NEPA (32 CFR § 775); and Marine Corps Order 5090.2, dated 11 June 2018, *Environmental Compliance and Protection Program*.

Under the Proposed Action, the USMC proposes to establish and use landing zones (LZs), an assault landing zone (ALZ), drop zones (DZs), and an artillery firing area (AFA) at the two tactical ranges within the Bob Stump Training Range Complex (BSTRC): the Chocolate Mountain Aerial Gunnery Range (CMAGR), California and the Barry M. Goldwater Range (BMGR)-West, Arizona. The USMC does not propose to increase the quantity of aircraft sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC under the Proposed Action.

The purpose of the Proposed Action is to optimize mission-critical training capabilities within the BSTRC for Marine Corps and Naval aviators and Marine Air-Ground Task Force artillery cannoneers. The Proposed Action is needed to establish LZs, an ALZ, DZs, and an AFA at the BSTRC, which would provide MV-22 aircraft similar flexibility to existing Legacy Rotary-Wing Aircraft Policy and Procedures and provide a safer and more realistic artillery firing training environment. The Proposed Action is also needed to accomplish critical Marine Corps and Naval Tactical Training Procedures, Training and Readiness Codes, and Large Force Exercises.

Implementation of the Proposed Action would facilitate maintaining Marine Corps and other forces at an optimal state of readiness to support current and emerging contingency and wartime requirements. If the Proposed Action is not implemented, there would continue to be a negative impact on training in support of Assault Support Tactics and Training and Readiness Certifications. The USMC considered multiple potential action alternatives for implementing the Proposed Action; however, after careful consideration, none of the potential alternatives would meet the purpose and need of the Proposed Action. Therefore, this EA analyzes the Proposed Action and the No-Action Alternative in detail.

The following resource areas were evaluated for potential environmental consequences: air quality, biological resources, cultural resources, and geological resources. Resource areas that would have negligible or non-existent impacts from implementation of the Proposed Action and the No-Action Alternative, and as such have not been analyzed in detail in this EA include: airspace and air traffic, noise, visual resources, hazardous materials and wastes, utilities and infrastructure, public health and safety, socioeconomics and environmental justice, water resources, land use, recreation, and ground transportation.

Table ES-1 presents a summary of the potential impacts to each resource area resulting from implementation of the Proposed Action and the No-Action Alternative.

Resource Area	Proposed Action	No-Action Alternative
Resource Areas Eliminated from Detailed An	alysis	
Airspace and Air Traffic	No change in airspace. No alteration of the existing configuration of airspaces within the BSTRC. No increase in number of sorties or in the type or amount of ordnance expended. No impact to existing airspace designations and a negligible impact to airspace operations. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Noise	The airspace and artillery-related training noise from the Proposed Action would be consistent with existing training and not result in a discernable change in noise levels to off-installation receptors at the CMAGR and BMGR- West. There are no sensitive human receptors or residential communities in or adjacent to the project area. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Visual Resources	No alteration of the existing visual setting of the project area and vicinity. Use of training support areas would be visually consistent with existing training activity. <i>Conclusion</i> : Negligible Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Hazardous Materials and Wastes	Potential for an inadvertent release of fuels, lubricants, coolants, or hydraulic fluids from vehicles and equipment. All hazardous materials and waste generated would continue to be managed and handled in accordance with applicable Marine Corps Air Station (MCAS) Yuma Environmental Standard Operating Procedures. Conclusion: Negligible Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Utilities and Infrastructure	No increase in utility demand or impact to existing regional utilities. Grading of the combat trail to the AFA would result in an incremental increase in road infrastructure. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. Conclusion: No Impact.
Public Health and Safety	Potential for trespassers to interrupt training activities. Potential to encounter unexploded ordnance. Consistent with current operations. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Socioeconomics and Environmental Justice	No creation of new jobs. Short-term and negligible increase to the local economy during training support area development. <i>Conclusion</i> : <b>Negligible Impact</b> . The Proposed Action would be confined to the BSTRC and not adjacent to minority or low-income populations. Children (and all unauthorized people) are not allowed on lands designated for military training. <i>Conclusion</i> : <b>No Disproportionate Impact</b> to minority or low-income populations or the health and safety of children.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>

Table ES-1	<b>Summary</b>	of Environmental	Consequences
			0010000000000

Resource Area	Proposed Action	No-Action Alternative
Water Resources	No impacts to surface waters, groundwater, or waters of the U.S. All activities would occur in upland areas. Low potential for erosion to result in indirect impact to water resources. Application of water-permeable dust palliative would not generate additional runoff to adjacent areas. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Land Use	No change to existing land use designations or incompatible effects to off- installation land uses. <i>Conclusion</i> : <b>No Impact.</b>	No change from existing conditions. Conclusion: No Impact.
Recreation	No impact to the public's ability to recreate in existing recreational areas adjacent to the CMAGR. Potential increase in public recreation area closures in BMGR-West during training. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Ground Transportation	Short-term increase of a few (approximately 30) vehicle trips during initial grading and maintenance. No long-term increase in vehicle trips or impact to the existing regional surface transportation network. <i>Conclusion</i> : Negligible Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Resource Areas Analyzed in Detail		
Air Quality	Combined grading and operational emissions would be less than <i>de minimis</i> levels for all criteria pollutants. <i>Conclusion:</i> <b>No Significant Impact.</b>	No change from existing conditions. Conclusion: No Impact.
Biological Resources	Approximately 57.7 acres of desert scrub/wash vegetation would be permanently impacted by grading at the CMAGR. Vegetation and wildlife would temporarily be impacted during training activities, including landings/takeoffs of MV-22s. Adverse effects to the desert tortoise would be minimized by implementation of CMs (see Section 2.5.2) and any other requirements in the anticipated Biological Opinion. <i>Conclusion:</i> No Significant Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Cultural Resources	No impacts to cultural resources (as defined in Chapter 3.4). MCAS Yuma is consulting with the Arizona and California State Historic Preservation Offices regarding concurrence with their findings of no historic properties affected. <i>Conclusion:</i> No Significant Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>
Geological Resources	Grading would result in alterations to topographic features. Grading and training activities would cause compaction of soils and an increase in erosion potential. <i>Conclusion</i> : <b>No Significant Impact</b> .	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>

Table ES-1 Summary of Environmental Consequence
---

## **Acronyms and Abbreviations**

AFA	artillery firing area		Squadron One
ALZ	assault landing zone	MCAS	Marine Corps Air Station
APE	area of potential effect	MCO	Marine Corps Order
BMGR	Barry M. Goldwater Range	NAAQS	National Ambient Air Quality Standards
BO	Biological Opinion	NAVFAC	Naval Facilities Engineering Systems
BSTRC	Bob Stump Training Range Complex		Command
		Navy	Department of the Navy
CAA	Clean Air Act	NEPA	National Environmental Policy Act
CAAQS C	alifornia Ambient Air Quality Standards	$N_2O$	nitrous oxide
CEQ	Council on Environmental Quality	$NO_2$	nitrogen dioxide
CFR	Code of Federal Regulations	NO <sub>x</sub>	nitrogen oxides
CH <sub>4</sub>	methane		
CM	conservation measure	$O_3$	ozone
CMAGR	Chocolate Mountain Aerial		
	Gunnery Range	$PM_{10}$	particulate matter less than or equal to 10
CO	carbon monoxide	PM <sub>2.5</sub>	particulate matter less than or equal to 2.5
CO <sub>2</sub>	carbon dioxide	ppm	parts per million
DZ	drop zone	RTA	range and training area
EA	Environmental Assessment	$SO_2$	sulfur dioxide
EO	Executive Order	SWPPP	Stormwater Pollution Prevention Plan
EOD	Explosives Ordnance Disposal		
		TTPs	Tactical Training Procedures
FCR	Field Contact Representative		-
	_	μg/m³	micrograms per cubic meter
GHGs	greenhouse gases	U.S.	United States
		USC	U.S. Code
ICAPCD	Imperial County Air Pollution	USEPA	U.S. Environmental Protection Agency
	Control District	USFWS	U.S. Fish and Wildlife Service
INRMP	Integrated Natural Resources	USMC	U.S. Marine Corps
	Management Plan		
	-	VOCs	volatile organic compounds
LZ	landing zone		_
		WTI	Weapons and Tactics Instructor

MAWTS-1 Marine Aviation Weapons and Tactics

#### Draft

#### Environmental Assessment ESTABLISHMENT AND USE OF TRAINING SUPPORT AREAS IN THE BOB STUMP TRAINING RANGE COMPLEX MARINE CORPS AIR STATION, YUMA

#### **TABLE OF CONTENTS**

ABSTRA	ACTi	inside front cover
EXECU'	TIVE SUMMARY	ES-1
ACRON	NYMS AND ABBREVIATIONS	i
CHAPT	TER 1 PURPOSE AND NEED FOR THE PROPOSED ACTION	1-1
1.1	INTRODUCTION	1-1
1.2	PROJECT LOCATION	1-1
1.3	BACKGROUND	1-3
	1.3.1 Chocolate Mountain Aerial Gunnery Range	1-3
	1.3.2 Barry M. Goldwater Range	1-3
	1.3.3 Marine Aviation Weapons and Tactics Training	1-3
	1.3.4 Legacy Rotary-Wing Aircraft Operations	1-6
	1.3.5 On-Going Training Challenges	1-6
1.4	PURPOSE OF AND NEED FOR THE PROPOSED ACTION	1-7
1.5	SCOPE OF ANALYSIS	1-7
1.6	REGULATORY SETTING	1-7
1.7	ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT	1-8
1.8	PUBLIC PARTICIPATION	
CHAPT	TER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNAT	<b>ΓΙVES</b> 2-1
2.1	OVERVIEW	2-1
2.2	PROPOSED ACTION	2-1
2.3	NO-ACTION ALTERNATIVE	2-7
2.4	ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS	2-8
2.5	CONSERVATION MEASURES	2-8
	2.5.1 Air Quality	2-8
	2.5.2 Biological Resources	2-9
	2.5.3 Cultural Resources	2-13
	2.5.4 Geological Resources	2-13
	2.5.5 Water Resources	2-13
2.6	SUMMARY OF ENVIRONMENTAL CONSEQUENCES	2-13
CHAPT	TER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSE	QUENCES3-1
3.1	APPROACH TO ANALYSIS	3-1
	3.1.1 Resources Eliminated From Detailed Analysis	3-1
3.2	AIR QUALITY	
	3.2.1 Definition of Resource	
	3.2.2 Affected Environment	

	3.2.3	Environmental Consequences
3.3	BIOLO	GICAL RESOURCES
	3.3.1	Definition of Resource
	3.3.2	Affected Environment
	3.3.3	Environmental Consequences
3.4	Cultu	RAL RESOURCES
	3.4.1	Definition of Resource
	3.4.2	Affected Environment
	3.4.3	Environmental Consequences
3.5	GEOLC	GICAL RESOURCES
	3.5.1	Definition of Resource
	3.5.2	Affected Environment
	3.5.3	Environmental Consequences
		1
СНАРТ	ER4	OTHER NEPA CONSIDERATIONS4-1
<b>CHAPT</b> 4.1	<b>ER 4</b> Possie	<b>OTHER NEPA CONSIDERATIONS</b>
<b>CHAPT</b> 4.1	<b>ER 4</b> Possie State	<b>A-1</b> OTHER NEPA CONSIDERATIONS
<b>CHAPT</b> 4.1 4.2	<b>ER 4</b> Possie State Energ	4-1 CONFLICTS BETWEEN THE PROPOSED ACTION AND THE OBJECTIVES OF FEDERAL, LOCAL, AND REGIONAL LAND USE PLANS, POLICIES, AND CONTROLS
<b>CHAPT</b> 4.1 4.2	<b>ER 4</b> Possie State Energ Propo	4-1 STHER NEPA CONSIDERATIONS
<b>CHAPT</b> 4.1 4.2 4.3	<b>ER 4</b> Possie State Energ Propo Irrevi	A-1 COTHER NEPA CONSIDERATIONS
<b>CHAPT</b> 4.1 4.2 4.3 4.4	<b>ER 4</b> Possie State Energ Propo Irreve Relat	4-1 SUBJECTIVES OF FEDERAL, AND CONTROLS OF FEDERAL, LOCAL, AND REGIONAL LAND USE PLANS, POLICIES, AND CONTROLS
<b>CHAPT</b> 4.1 4.2 4.3 4.4	<b>ER 4</b> Possie State Energ Propo Irreve Relat Maint	4-1 SUBJECTIVES OF FEDERAL, A-1 SUBJECTIVES OF FEDERAL, A-1 SUBJECTIVES OF FEDERAL, AND REGIONAL LAND USE PLANS, POLICIES, AND CONTROLS
<ul> <li>CHAPT</li> <li>4.1</li> <li>4.2</li> <li>4.3</li> <li>4.4</li> <li>4.5</li> </ul>	<b>ER 4</b> Possie State Energ Propo Irreve Relat Maint Means	4-1 STORE ACTION AND THE OBJECTIVES OF FEDERAL, AND REGIONAL LAND USE PLANS, POLICIES, AND CONTROLS
<ul> <li>CHAPT</li> <li>4.1</li> <li>4.2</li> <li>4.3</li> <li>4.4</li> <li>4.5</li> <li>CHAPT</li> </ul>	<b>ER 4</b> Possie State Energ Propo Irreve Relat Maint Means	4-1         OTHER NEPA CONSIDERATIONS         4-1         Ste Conflicts between the Proposed Action and the Objectives of Federal,         , Local, and Regional Land Use Plans, Policies, and Controls         Y Requirements and Conservation Potential of Alternatives Including the         sed Action and All Mitigation Measures Being Considered         4-1         ersible or Irretrievable Commitment of Natural or Finite Resources         4-1         ionship between Local Short-Term Use of the Human Environment and         enance and Enhancement of Long-Term Natural Resource Productivity         s To Mitigate and/or Monitor Adverse Environmental Impacts         state         state         state         state         state

#### APPENDICES

APPENDIX A	Public, Agency, and Tribal Coordination
APPENDIX B	Air Quality Calculations and Record of Non-Applicability

## List of Figures

Figure		Page
1-1	Regional Location of the Chocolate Mountain Aerial Gunnery Range and Barry M. Goldwater Range	1-2
1-2	Training Support Areas at the Chocolate Mountain Aerial Gunnery Range	1-4
1-3	Training Support Areas at the Barry M. Goldwater Range-West	1-5
2-1	Proposed Training Support Areas	2-3
2-2a	Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range	2-4
2-2b	Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range	2-5
2-3	Proposed Training Support Areas at the Barry M. Goldwater Range-West	2-6
3.1-1	Existing Airspace and Training Support Areas within the Chocolate Mountain Aerial Gunnery Range	3-2
3.1-2	Existing Airspace and Training Support Areas within the Barry M. Goldwater Range-West	3-3
3.5-1	Geologic Features in the Vicinity of the Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range	3-28
3.5-2	Geologic Features in the Vicinity of the Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range	3-29

#### List of Tables

<u>Table</u>		Page
ES-1	Summary of Environmental Consequences	ES-2
2-1	Proposed Training Support Areas Under the Proposed Action	2-2
2-2	Summary of Environmental Consequences	2-14
3.2-1	National and California Ambient Air Quality Standards	3-10
3.2-2	Applicable Criteria Pollutant de minimis Levels (tons/year)	3-11
3.2-3	Proposed Action within the CMAGR with Evaluation of Conformity	3-12
3.2-4	Proposed Action Grading and Operational GHG Emissions	3-12
3.3-1	Special Status Species Potentially Occurring in the CMAGR Action Area	3-15
3.3-2	Special Status Species Potentially Occurring in the BMGR-West Action Area	3-17

This page intentionally left blank.

## CHAPTER 1 PURPOSE AND NEED FOR THE PROPOSED ACTION

#### 1.1 INTRODUCTION \_\_\_\_\_

The United States (U.S.) Marine Corps (USMC) proposes to establish and use landing zones (LZs), an assault landing zone (ALZ), drop zones (DZs), and an artillery firing area (AFA) at the two tactical ranges within the Bob Stump Training Range Complex (BSTRC): the Chocolate Mountain Aerial Gunnery Range (CMAGR) and the Barry M. Goldwater Range (BMGR)-West. The establishment and use of these training support areas in the BSTRC is essential to accomplishing critical Marine Corps and Naval Tactical Training Procedures (TTPs), Training and Readiness Codes, and Large Force Exercises.

Marine Corps Air Station (MCAS) Yuma manages the BSTRC, which consists of Department of Defensecontrolled airspace and Department of the Navy (Navy)/USMC-controlled training ranges, including the CMAGR in southeastern California and the BMGR-West in southwestern Arizona (Figure 1-1). The BSTRC is essential for developing and maintaining the readiness of Marine Corps and Naval aviators and is vital for land warfare training conducted by select Navy (i.e., Naval Special Warfare Sea, Air, and Land units) and Marine Corps forces.

The USMC has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] §§ 4321-4370h), as implemented by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] §§ 1500-1508) regulations; Department of the Navy procedures for implementing NEPA (32 CFR § 775); and Marine Corps Order (MCO) 5090.2, dated 11 June 2018, *Environmental Compliance and Protection Program*.

#### 1.2 PROJECT LOCATION\_\_\_\_\_

The Proposed Action would be implemented at the two tactical ranges within the BSTRC: the CMAGR and BMGR-West (Figure 1-1).

The CMAGR, lying on a southeast-northwest axis, is located in north-central Imperial County and south-central Riverside County, California (Figure 1-1). The CMAGR is generally bound on the west by the Salton Sea Basin and on the east by the Chuckwalla and Palo Verde mountains.

The BMGR-West is located in Yuma County, Arizona and is bound on the south by the U.S.-Mexico border and Cabeza Prieta and the west by the City of Yuma (Figure 1-1). Interstate Highway 8 is adjacent to the northern boundary of the BMGR-West.

Establishment and Use of Training Support Areas in the BSTRC





Figure 1-1. Regional Location of the Chocolate Mountain Aerial Gunnery Range and Barry M. Goldwater Range



#### 1.3 BACKGROUND\_

### 1.3.1 Chocolate Mountain Aerial Gunnery Range

The CMAGR is the premier national live-fire training range essential for developing and maintaining the readiness of Marine Corps and Navy aviators. The range is also vital for training select Marine Corps and Navy land combat forces. The CMAGR currently supports training by units of the Navy, U.S. Air Force, U.S. Army, U.S. Reserve Components, and U.S. National Guard; however, the Marine Corps, and in particular, the 3<sup>rd</sup> Marine Aircraft Wing is the primary user of the CMAGR. Local command for military operation and administration of the CMAGR, which is approximately 459,000 acres in size, has been delegated by the Secretary of the Navy to the Commanding Officer, MCAS Yuma, Arizona (Navy 2013). Existing training support areas at the CMAGR are depicted on Figure 1-2.

Ground combat training also occurs at the CMAGR. The use of the range for ground warfare training dates from 1966, and is oriented toward individual fighting skills and unit tactics. Ground warfare, to include the use of artillery, typically involves battalion-sized or smaller units. The USMC routinely deploys small units, up to battalion in size, to MCAS Yuma for ground training, and twice annually, the USMC sends an infantry battalion to MCAS Yuma to support the Weapons and Tactics Instructor (WTI) Course. The CMAGR also has an extensive network of ground ranges for training in small arms, artillery, and explosives.

#### **1.3.2 Barry M. Goldwater Range**

The BMGR is one of the most heavily used ranges in the U.S. across all Department of Defense services and allied foreign militaries. The BMGR is a roughly 1.7-million-acre military aviation training facility composed of airspace and lands located in southwestern Arizona. BMGR is used to train military aircrews to fly air combat missions for both air-to-ground and air-to-air operations. To a lesser extent, the range is also used for other types of training, most of which support or are associated with air combat training. Examples of existing facilities used for training include an auxiliary airfield complex, realistic targets for air-to-ground attack, air-to-air firing ranges, and electronic warfare training ranges. The eastern portion of the BMGR, known as BMGR-East (see Figure 1-1), is assigned to the Secretary of the Air Force, and is not a part of the Proposed Action. MCAS Yuma operates and maintains the western portion of the BMGR, known as BMGR-West, which is approximately 700,000 acres in size. Existing training support areas at the BMGR-West are depicted on Figure 1-3.

#### **1.3.3** Marine Aviation Weapons and Tactics Training

The mission of Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) is to conduct standardized, advanced tactical training and certification of unit instructor qualifications that support Marine Aviation Training and Readiness. MAWTS-1 accomplishes this by conducting a biannual (twice a year in the spring and fall) WTI course. WTI is the Marine Corps' primary aviation weapons and tactics course and its evolutions are designed to provide the most realistic training environment possible. The WTI course is a seven-week course conducted within the BSTRC, at both the CMAGR and BMGR-West, consisting of advanced tactical aviation training designed to produce weapons and tactics instructors.







Establishment and Use of Training Support Areas in the BSTRC







## **1.3.4 Legacy Rotary-Wing Aircraft Operations**

Legacy rotary-wing aircraft landings are currently authorized in all MCAS Yuma designated LZs, with proper range clearance and scheduling (MCAS Yuma 2013). Legacy aircraft are those that are no longer in production but may still be used in military operations. In addition to designated LZs, rotary-wing aircraft are authorized to land in non-designated and/or undeveloped of the CMAGR and BMGR-West during non-emergency situations, except for certain areas, such as designated target areas, marked or fenced areas, designated areas for protected animal and plant species, and designated areas for the protection of cultural resources, as well as other off-limit areas as specified in the MCAS Yuma Standard Operating Procedures (MCAS Yuma 2013). Current operating procedures allow for legacy rotary-wing aircraft to land in and utilize a greater variety of locations at the BSTRC than tilt-rotor aircraft, such as the MV-22, which are assigned to landing in MCAS Yuma designated LZs.

## **1.3.5** On-Going Training Challenges

Landing zones are designated areas for landing and takeoff of aircraft. Currently at the BSTRC, as described above, tilt-rotor aircraft (i.e., the MV-22) have a fewer number of established LZs than legacy rotary-wing aircraft because MCAS Yuma Standard Operating Procedures (MCAS Yuma 2013) were written when the MV-22 was at a relatively new stage of operation. However, with the MV-22 since becoming a fully operational platform, it requires similar LZs as rotary-wing aircraft at the BSTRC to optimize the use of the training range for its intended purpose. It is critical that MV-22 aircraft have similar flexibility to legacy rotary-wing assault support aircraft in order to conduct air-to-ground embark of troops in LZs during training evolutions in support of Assault Support Tactics and Training and Readiness Certifications. This mission is prevalent in today's combat environment and supports the Air/Ground Order of Battle.

Assault Landing Zones are designated LZs that allow for landing and takeoff of fixed-wing, rotary-wing, and tilt-rotor aircraft in geographic locations that contain expeditionary or hasty landing fields that expose aircrews to maximum-effort takeoffs/landings within a rigorous setting. The Assault Support training community has critical and emergent requirements to train on unimproved surfaces for combat readiness and for expeditionary operations. Currently, there are no ALZs within the CMAGR. MAWTS-1 and fleet users have critical and emergent requirements to train on unimproved surfaces for combat readiness and for expeditionary operations in the BSTRC.

Drop Zones are designated areas for the aerial delivery of small-unit parachute operations (personnel and cargo pallets), including the pick-up of personnel and equipment following operations. Currently, the majority of DZs in the BSTRC are located in approved ground support areas. Ground support areas are multiple use areas for activities such as bivouacking, berming, trenching, Forward Logistics Base operations, field mess, field showers, and DZ and LZ operations. On occasion, DZs are required outside of the ground support areas in order to facilitate strategic locations or alternative areas based on the Air/Ground Order of Battle.

Artillery Firing Areas are on-ground areas established to support ground combat artillery (i.e., large-caliber guns, howitzers, and mortars) firing activities. During WTI courses, there are several events that require artillery live-fire support. Currently, the primary AFA at the CMAGR used during WTI courses is too close to the target impact areas, which does not allow for a realistic artillery employment scenario. In addition, the proximity to the impact area limits the targets that are able to be engaged safely when traversing the gun-target line with rotary-wing aircraft due to the maximum ordnance of the round. A new AFA at the CMAGR, established farther from the target impact areas, would extend the artillery range and associated

training envelope, which would subsequently increase the separation from the aircraft and the flight path of the round when crossing the gun-target line.

#### 1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION \_\_\_\_\_

The purpose of the Proposed Action is to optimize mission-critical training capabilities within the BSTRC for Marine Corps and Naval aviators and Marine Air-Ground Task Force artillery cannoneers (ground troops who fire artillery). The Proposed Action is needed to establish LZs, an ALZ, DZs, and an AFA at the BSTRC, which would provide MV-22 aircraft similar flexibility to existing Legacy Rotary-Wing Aircraft Policy and Procedures and provide a safer and more realistic artillery firing training environment. The Proposed Action is also needed to accomplish critical Marine Corps and Naval TTPs, Training and Readiness Codes, and Large Force Exercises.

#### 1.5 SCOPE OF ANALYSIS \_\_\_\_\_

This EA describes the potential environmental consequences resulting from the Proposed Action and the No-Action Alternative on the following resource areas: air quality, biological resources, cultural resources, and geological resources. As discussed in Chapter 3, impacts to other resource areas are anticipated to be negligible or non-existent from implementation of the Proposed Action and the No-Action Alternative, and as such have not been analyzed in detail.

#### 1.6 REGULATORY SETTING \_\_\_\_\_

This EA has been prepared based on NEPA requirements as outlined in the following statutes, regulations, and guidance documents:

- NEPA of 1969 (42 USC §§ 4321-4370h), which requires an environmental analysis for major federal actions that have the potential to significantly impact the quality of the human environment
- CEQ regulations (40 CFR §§ 1500-1508), which implement the requirements of NEPA
- Navy regulations for implementing NEPA (32 CFR § 775), which provide Navy policy for implementing the CEQ regulations and NEPA
- MCO 5090.2, dated 11 June 2018, Environmental Compliance and Protection Program

This EA has been prepared in accordance with the following additional statutory and executive requirements:

- Clean Air Act, as amended (42 USC §§ 7401-7671q), including 1990 General Conformity Rule
- Clean Water Act (33 USC §§ 1251-1387)
- Comprehensive Environmental Response, Compensation, and Liability Act (42 USC §§ 9601-9675)
- Endangered Species Act (16 USC §§ 1531-1544)
- Executive Order (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 13186 Responsibilities of Federal Agencies to Protect Migratory Birds
- Migratory Bird Treaty Act (16 USC §§ 703-712)

- National Historic Preservation Act (54 USC §§ 300101-305306)
- American Indian Religious Freedom Act (42 USC §§ 1996 and 1996a)
- Resource Conservation and Recovery Act (42 USC §§ 6901-6992k) and governing regulations (40 CFR §§ 260-282)

#### 1.7 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT \_

Chapter 1 of this EA describes the background, purpose of, and need for the Proposed Action. Chapter 2 of this EA describes the Proposed Action and the No-Action Alternative. Chapter 3 provides a description of the affected environment and the potential impacts of each alternative on each environmental resource area. Chapter 4 provides other analyses required by NEPA (i.e., possible conflicts between the action and the objectives of federal, regional, state and local plans, policies, and controls; irreversible and irretrievable commitment of resources). Chapter 5 contains all references used in this EA. Chapter 6 provides the list of EA preparers and their qualifications. The appendices contain additional information and documentation prepared in support of this EA.

## 1.8 PUBLIC PARTICIPATION \_\_\_\_\_

As part of this EA, the USMC will publish a Public Notice of Availability for the Draft EA in three local newspapers: the Imperial Valley Press. the Yuma Daily Sun. and the Adelante Valle (Spanish language newspaper). The Draft EA will be made available at three libraries for public review and comment. In addition, the Draft EA will be posted to the MCAS Yuma website. The public comment period will be 15 days.

# CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

## 2.1 OVERVIEW \_

Under the Proposed Action, the USMC would permanently establish and use designated LZs, an ALZ, DZs, and an AFA within the BSTRC. The USMC would not increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC as part of this Proposed Action. Under the Proposed Action, training within the project area would continue to be consistent with activities addressed and analyzed in the Yuma Training Range Complex Environmental Impact Statement (USMC 1997).

As this Proposed Action would support on-going training activities within the BSTRC, the project team did not consider any locational alternatives other than the BSTRC. The USMC considered multiple potential action alternatives for implementing the Proposed Action; however, after careful consideration, none of the potential alternatives would meet the purpose and need of the Proposed Action. Therefore, this EA evaluates two alternatives: the Proposed Action and the No-Action Alternative. Section 2.2 describes the Proposed Action and Section 2.3 describes the No-Action Alternative. Other alternatives considered but eliminated from detailed analysis are described in Section 2.4.

### 2.2 PROPOSED ACTION

Under the Proposed Action, the USMC would establish five LZs, an ALZ, and an AFA at the CMAGR; and two DZs and nine LZs at the BMGR-West (Figure 2-1). The number and locations of the proposed training support areas were chosen to best support Marine Corps and Naval TTPs, Training and Readiness Codes, and Large Force Exercises. Establishment of these areas would not require any paving, permanent structures, or new utilities. Table 2-1 details the proposed training support areas at the CMAGR and BMGR-West, and they are depicted on Figures 2-2a, 2-2b, and 2-3. The proposed training support areas, specific to the Proposed Action, include:

• LZs established under the Proposed Action would allow for landing and takeoff of MV-22 aircraft in realistic combat scenarios in the Range and Training Areas (RTAs) consistent with Legacy Rotary-Wing Aircraft Policy and Procedures. Marine Corps Assault Support Tactics require the ability and flexibility to land aircraft while conducting evolutions within a single objective area. MV-22 aircraft require the ability to tactically ingress and egress. LZs established for use by MV-22 aircraft would largely remain in their natural states and no new roads would be established for use of the LZs. However, to reduce the threats to aircraft and aircrews posed by large, woody vegetation, minor trimming of woody vegetation may occur biannually in and in the immediate vicinity of MV-22 landing sites within the LZs. Because aircrews would intentionally not land in washes, but would land in areas that are devoid or nearly devoid of vegetation, it is expected that the need for biannual vegetation trimming would be minimal. No plants would be intentionally uprooted or removed and trimming would be done with hand tools. In addition, LZs would not be scheduled for dust abatement. However, if deemed necessary prior to training operations due to high potential for unsafe dust conditions for aircrews, an eco-safe, biodegradable, liquid copolymer dust palliative (e.g., brand name "Envirotac II") may be applied to the LZs for dust suppression.

• ALZs facilitate the landing and takeoff of fixed-wing, rotary-wing, and tilt-rotor aircraft in geographic locations that contain expeditionary or hasty landing fields that expose aircrews to maximum-effort takeoffs/landings within a rigorous setting. The Assault Support training community has critical and emergent requirements to train on unimproved surfaces for combat readiness and for expeditionary operations. Although ALZs do not require the establishment of support facilities or structures, occasional maintenance grading would be required to maintain the expeditionary landing strip within the ALZ. In addition, following initial grading, the landing strip would receive an application of an eco-safe, biodegradable, liquid copolymer dust palliative (as previously discussed for LZs). The landing strip would receive re-applications of the dust palliative as needed. The dust palliative is used to provide erosion control and dust suppression. No new roads would be established for use of the ALZ.

Training Support Area Type	Training Support Area Name	Acres
CMAGR		
	Pina	68.3
	Salvation Northern Multi-ship	487.0
Landing Zone	Salvation Southern Multi-ship	738.0
	Salvation Single Ship North 1	8.8
	Salvation Single Ship North 2	8.8
Assault Landing Zone	Bull	12.9
	AFA Burt 2.0	42.0
Artillery Firing Area	Access Road	33.4
	Combat Trail	11.4
	Subtotal	1,410.6
BMGR-West		
Dron Zona	Remo	776.0
	Hickey	776.0
	No. 1	48.5
	No. 2	48.5
	No. 3	48.5
	No. 4	48.5
Landing Zone	No. 5	48.5
	No. 6	7.8
	No. 7	7.8
	No. 8	7.8
	No. 9	7.8

Table 2-1	Proposed Training Support Areas Under the Proposed Action
-----------	---

Subtotal

TOTAL

1,825.7 3,236.3

Establishment and Use of Training Support Areas in the BSTRC

Draft EA



#### Figure 2-1. Proposed Training Support Areas



Draft EA



Figure 2-2a. Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range



Existing Dirt Road

Landing Zone Pina

Landing Zone Salvation Pass Multi-Ship

Draft EA







Draft EA







- **DZs** established outside of the ground support areas at the BMGR-West would allow for the aerial delivery of small-unit parachute operations (personnel and cargo pallets), including the pick-up of personnel and equipment following operations. Currently the majority of DZs in the BSTRC are located in the approved ground support areas. Additional DZs established outside of the ground support areas would facilitate training in strategic locations or alternative areas based on the Air/Ground Order of Battle. Each DZ would remain in its natural state and no maintenance or improvement would be required. In addition, no new roads would be established for use of the DZs.
- AFAs are areas established to allow ground support troops to setup artillery (i.e., large-caliber guns, howitzers, and mortars) for firing into previously established target areas. The establishment of the AFA would not entail any major earthwork beyond on-ground troops digging pits to help absorb the recoil of the artillery. Following training activities, any pits that were dug would be filled and returned to pre-activity contours. AFA Burt 2.0 would require the use of an existing unmaintained dirt access road that stems off of Midway Well Road for access by ground training vehicles and equipment, and the establishment of a combat trail to the AFA (see Figure 2-2b). The access road would be unimproved, graded dirt roads that would require initial and occasional grading to maintain the accessibility of the roads and to allow maneuverability of vehicles and equipment. Both the access road and combat trail would receive an initial application of a dust palliative and would receive re-applications as needed.

Under the Proposed Action, no new paved roads or permanent buildings/structures would be established. Operations under the Proposed Action would generally be consistent with on-going operations in the BSTRC. The USMC would not increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC.

Operations within the proposed training support areas would be scheduled and deconflicted with other range users. Once established, the additional training support areas would add to the available locations for MV-22 aircraft operations. Likewise, the addition of an ALZ would add to the overall available training locations for all MAWTS-1/WTI purposes. All proposed training support areas would be utilized in a natural or near-natural setting, except for minor, as needed vegetation trimming, and occasional grading maintenance required to maintain the accessibility of the access road and combat trail to AFA Burt 2.0 and to maintain the expeditionary landing strip at ALZ Bull.

#### 2.3 NO-ACTION ALTERNATIVE \_\_\_\_\_

For the purposes of this EA, "no-action" means that the proposed LZs, ALZ, DZs, and AFA within the BSTRC would not be established. Consequently, the potential training challenges for WTI and similar operations at the CMAGR and BMGR-West would persist. This situation would continue to affect the capability of forces to achieve training requirements needed to support current and emerging contingency and wartime requirements. The No-Action Alternative is included as a baseline for comparison to all action alternatives for determining project effects.

The No-Action Alternative is not considered a reasonable alternative because it does not meet the purpose of and need for the Proposed Action. However, as required under CEQ regulations (40 CFR § 1502.14[d]), the No-Action Alternative does provide a description of the baseline conditions against which the impacts of the Proposed Action can be compared.

#### 2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS \_\_\_\_\_

For WTI operations, the USMC has considered continued use of established AFAs at the CMAGR. The continued use of established AFAs during WTI operations is not feasible, however, due to aircraft safety limitations and unrealistic ground support artillery training scenarios because of the proximity of existing AFAs to the target areas at the CMAGR. Continued use of existing AFAs during WTI operations would not allow "real world" simulations in the training environment. Therefore, critical Marine Corps and Naval TTPs, Training and Readiness Codes, and Large Force Exercises would not be fully satisfied, which adversely impacts training ability and overall operational readiness.

The USMC also considered the continued use of an existing 4,000-foot "improved" asphalt strip at the CMAGR which provides short airfield training for multiple aircraft types. However, use of the current asphalt airstrip does not satisfy the requirement of training in "unimproved" conditions, nor is it located in a geographic location that presents expeditionary or hasty training opportunities that expose aircrews to maximum-effort landings/takeoffs within a rigorous setting. Training in an ALZ is required for aircrews to satisfy higher-level TTPs and Training and Readiness Codes. Therefore, continued use of the existing 4,000-foot "improved" asphalt strip at the CMAGR would not support the purpose and need of the Proposed Action, and this alternative was not brought forward for detailed analysis.

Finally, the USMC considered an original configuration and location for ALZ Bull which, following field reconnaissance during field surveys, was deemed to have potential environmental and logistical constraints because it would require grading in portions of several ephemeral desert washes. Ephemeral washes carry water only during and immediately after significant rainfall events and would likely cause washouts, requiring a greater level of maintenance grading and potentially altering downslope habitats. Therefore, the location and configuration of ALZ Bull were changed, as presented in this EA, to reduce the potential for impacting ephemeral washes and related maintenance grading, and the original ALZ Bull configuration was not brought forward for analysis.

#### 2.5 CONSERVATION MEASURES\_

The following conservation measures (CMs) (organized by resource area) have been developed to avoid or minimize the potential environmental consequences of the Proposed Action. These CMs would be implemented as part of the Proposed Action. Biological Resources CMs in Section 2.5.2 are derived from the applicable terms and conditions from previous consultations with the U.S. Fish and Wildlife Service (USFWS) addressing similar actions and the desert tortoise, including the Biological Opinion (BO) for the Military Use of the CMAGR (1-6-96-F-40) (USFWS 1996) and the Proposed Special Warfare Training Areas 4 and 5 Amended BO for Military Use of the CMAGR (FWS-IMP-15B0239-16F0039; USFWS 2015).

#### 2.5.1 Air Quality

AQ-1) Imperial County Air Pollution Control District (ICAPCD) Rule 800 would be followed to minimize potential fugitive dust emissions by implementing measures to reduce particulate matter emissions (e.g., watering of exposed soils, soil stockpiling, and soil stabilization) during grading (ICAPCD 2012). This includes the preparation of a fugitive dust control plan before grading.

#### 2.5.2 Biological Resources

- BR-1) The MCAS Yuma Tortoise Management Representative within the Range Management Department would ensure compliance with protective stipulations by all users. This representative has the authority to halt activities that may be in violation of such provisions. The Tortoise Management Representative also would coordinate with the designated USFWS representative on all matters concerning desert tortoise mitigation and management responsibilities. The Tortoise Management Representative does not have to be a qualified desert tortoise biologist and therefore would receive instructions from a qualified desert tortoise biologist in the handling, data collection, and release procedures for desert tortoise prior to engaging in such activities. MCAS Yuma would submit the name(s) and credentials of the person(s) that would be the Tortoise Management Representative or appointee(s) (see CM BR-5 for additional information) to the USFWS. Only qualified desert tortoise biologists, the Tortoise Management Representative, or appointees ("appointee" is defined as a person having the same qualifications as the Tortoise Management Representative) would handle desert tortoises.
- BR-2) All personnel accessing the CMAGR would participate in MCAS Yuma's existing tortoise education program, which has been developed cooperatively with the USFWS. The program would include, at a minimum, the following topics: (1) occurrence of the desert tortoise; (2) sensitivity of the species to human activities; (3) legal protection for desert tortoises; (4) penalties for violations of federal law; (5) general tortoise ecology and activity patterns; (6) reporting requirements; (7) measures to protect tortoises; (8) personal measures that users can take to promote the conservation of desert tortoises; and (9) procedures and a point of contact if a desert tortoise is observed on the site.
- BR-3) All personnel accessing the CMAGR would be informed of their responsibility to report any form of take to the Tortoise Management Representative. If a tortoise is found in the proposed training support areas, activities may, if appropriate, be modified to avoid injuring or harming it and MCAS Yuma Tortoise Management Representative shall be contacted immediately.
- BR-4) Range Management personnel would be responsible for periodically reminding all personnel of the protective measures for tortoises.
- BR-5) Desert Tortoise Handling Procedures
  - a. Only biologists authorized by the USFWS shall handle desert tortoises, except in circumstances in which the life of the desert tortoise is in immediate danger (see item 5d, below). For biologists not already authorized, MCAS Yuma shall submit their credentials to the USFWS for review and approval at least 30 days before the initiation of any activity within suitable desert tortoise habitat.
  - b. Desert tortoises shall be moved only by an authorized biologist and solely for the purpose of moving the animals out of harm's way. Desert tortoises shall be moved the minimum distance to ensure their safety.
  - c. All handling of tortoises and their eggs and excavation of burrows are to be conducted by an authorized biologist in accordance with up-to-date protocols accessed at the USFWS website (http://www.fws.gov/ventura/endangered/species/surveys-protocol.html).
  - d. If an emergency situation exists, and a tortoise must be moved out of immediate danger, the animal may be moved to an adjacent shaded area (normally plant cover) out of direct sunlight.

Desert tortoises shall only be moved the minimum distance to ensure their safety. Range Management shall be notified.

- BR-6) MCAS Yuma would prepare and deliver an annual monitoring report to the USFWS on or before 15 January of each year. The report would briefly outline the effectiveness of the desert tortoise mitigation measures and summarize desert tortoise injuries or mortalities. To enhance desert tortoise protection, the report would make recommendations for modifying or refining existing measures.
- BR-7) The action area (the region subject to direct and indirect impacts to biological resources from the Proposed Action) would be included in the rotation of areas that are currently surveyed during ongoing annual surveys at the CMAGR (as funds are available). Surveys would be conducted using the USFWS-recommended methods by qualified desert tortoise biologists. Surveys would be conducted within existing safety protocols and mission parameters at the designated area(s) within the CMAGR during regularly scheduled range closures in the spring and all data are collected and entered into the MCAS Yuma Geographic Information System database. The results of monitoring would be included in the annual monitoring report prepared by MCAS Yuma and delivered to the USFWS on or before 15 January of each year. Any changes in survey methodology would be reported to the USFWS in an annual monitoring report.
- BR-8) In accordance with the existing BO for the CMAGR (1-6-95-F-40; USFWS 1996), the boundaries of ground-disturbing activities would be determined in the field, mapped, and marked with monuments prior to ground-disturbing activities. Ground-disturbing activities would occur outside of and away from surface drainage features, where feasible. All ground-disturbing activities would be within the designated boundaries. Desert tortoise clearance surveys conforming to USFWS recommendations would be followed for the initial siting of all ground-disturbing activities. A qualified desert tortoise biologist or the Tortoise Management Representative would also be onsite during initial ground-disturbing activities.
- BR-9) An authorized desert tortoise biologist would be "on-call"/available during ground-disturbing activities to address the situation if a desert tortoise is encountered. The MCAS Yuma Range Management Department would provide the USFWS the name(s) and qualifications of the biologist(s) for review and approval.
- BR-10) Any excavations associated with ground-disturbing activities that would be left open in areas that are not being monitored shall either be fenced temporarily to exclude desert tortoises, covered at the close of each work day, or provided with ramps so desert tortoises can escape. All excavations shall be inspected for desert tortoises before filling.
- BR-11) A tortoise exclusion fence would be installed around each site before grading. A qualified desert tortoise monitor would be present during the initial activity at each grading site. Once a tortoise fence is installed and the clearance surveys are completed, the monitor would no longer need to be present at the site. If a tortoise is found in the action area during grading activities, the tortoise would be allowed to move away on its own free will or would be safely moved by an approved desert tortoise biologist. Following grading, the tortoise exclusion fences would be removed.
- BR-12) All personnel conducting grading activities and operational range clearance (e.g., Explosives Ordnance Disposal [EOD] personnel) would monitor "take" as part of their sweeps of activity areas. Personnel would report to the Tortoise Management Representative any injured or dead tortoises located, as well as habitat damage outside of the designated activity area. Personnel would fill out

a form after ground-disturbing/training activities and EOD clearance activities, reporting any take. The Tortoise Management Representative (or appointee) would be present during all grounddisturbing activities and EOD clearance activities and available to respond to individual EOD and range maintenance crews (who would be trained per CMs BR-2 and BR-3) in the event the crews observe tortoise mortality/take, habitat damage, or need to have a tortoise relocated.

- BR-13) The project proponent would designate a Field Contact Representative (FCR) once ground clearing is completed and the desert tortoise fences are installed. The FCR would be responsible for overseeing compliance with biological resources CMs, and any other required terms and conditions resulting from consultation between the USMC and USFWS. The FCR would be on-site during all grading activities. The FCR would have a copy of all CMs during grading activities. The FCR may be a crew chief, field supervisor, project manager, or a contracted biologist. The FCR would have the authority to halt grading, operation, or maintenance activities that are in violation of these requirements. A representative from MCAS Yuma Range Management Department would make bi-weekly visits to ensure compliance.
- BR-14) Roads would conform to the natural contour of the land as much as possible to minimize grading and would avoid existing perennial plants as much as possible.
- BR-15) Vehicles traveling along access roads, or any road within critical habitat, shall not exceed 20 miles per hour. All roads entering critical habitat would be posted with speed limits of 20 miles per hour. To the extent practicable, vehicles would remain on established roads except as required for specific training activities. Vehicles used during specified training activities would stay within the confines of road boundaries until the destination is reached.
- BR-16) After ground-disturbing activities are completed, operations would be directed by the 1996 BO (USFWS 1996), and/or the anticipated amendment to the 1996 BO, or new and subsequent BOs tiered to the original, including the BO that would be issued for the Proposed Action, with the exception that off-road driving (which is prohibited by the 1996 BO) would be allowed.
- BR-17) All personnel operating vehicles within suitable tortoise habitat on the CMAGR would inspect underneath their parked vehicle before moving it. If a desert tortoise is found beneath a vehicle, the Tortoise Management Representative or qualified appointee(s) would be contacted, and the vehicle would not be moved until the Tortoise Management Representative removes it from harm's way or the tortoise leaves on its own accord.
- BR-18) No pets would be permitted at any time within the action area. Military working dogs are permitted, but only under the control of their handler.
- BR-19) All personnel that enter the action area would be required to remove all food stuffs, trash, or other waste that may attract common ravens (*Corvus corax*; hereafter raven) and other desert tortoise predators, in accordance with existing regulations for the CMAGR. Any temporary trash receptacles would be equipped with latching/locking lids. The Tortoise Management Representative would be responsible for ensuring that trash is removed regularly from the action area and that the trash containers are kept securely closed when not in use. MCAS Yuma would employ the following measures to further discourage raven settlement:
  - a. Abandoned vehicles found on the CMAGR would be inventoried and steps would be taken to remove them.

- b. Public use is restricted and would continue to be restricted in the CMAGR, thus reducing the raven attraction towards people.
- c. Cattle grazing and cattle watering troughs are restricted on the range and would remain as such for security and raven prevention.
- d. Range signs and fencing would be limited to a minimum to reduce the number of elevated perches.
- e. Training operations and personnel would be required to properly dispose of food and trash per Station Order 3710.63.
- f. Ground-disturbing activities would have appropriate trash receptacles per Station Order 3710.63.
- g. Personnel such as range wardens, range inspectors, and personnel using the training areas would be educated and instructed to report any raven sightings, which would be investigated and documented by MCAS Yuma biologists.
- h. Any raven or raven nests discovered on the CMAGR would be evaluated by MCAS Yuma biologists for tortoise predation. In addition, if any raven-damaged tortoise shells are found, the surrounding area would be searched for raven and raven nests. Upon completion of any necessary environmental review, and in accordance with appropriate permitting, any predatory ravens and their nests would be removed using methods similar to those identified in the March 2008 "Reduce Common Raven Predation on the Desert Tortoise" USFWS EA upon completion of any necessary environmental review and in accordance with appropriate permitting.
- i. Periodically, all wildlife guzzlers would be inspected by biologists, range inspectors, and range wardens for raven usage. Observations of tortoise carcasses and raven nests near guzzlers would result in further evaluation for removal.
- BR-20) The Tortoise Management Representative or appointee(s) would survey all ground support areas for dead or injured tortoises after the completion of each ground operation.
- BR-21) Should a dead or injured tortoise be located on-site during or after any military activity, the MCAS Yuma Range Management Department would be notified immediately. The USFWS would be notified by the Tortoise Management Representative via email within 3 working days of the discovery of any tortoise death or injury potentially caused by military activity. Notification would include the date, time, circumstances, and location of any injury or death. Dead tortoises would be buried to avoid attraction of scavengers. Injured tortoises would be taken to a veterinarian approved by the USFWS. Information to be provided to the USFWS would include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and any other pertinent information.
- BR-22) In an effort to control the spread of invasive (non-native) plants, all grading equipment and/or grading vehicles originating outside of the CMAGR, or BMGR-West shall be power-washed before entering roadways on the way to the CMAGR or BMGR-West. While washing wheeled vehicles, the front wheels shall be turned lock-to-lock to allow for exposure of surfaces that may hold soil or plant seeds.

#### 2.5.3 Cultural Resources

CR-1) Should potential subsurface archaeological deposits be detected in the course of grading or operations, all work in the discovery area would cease. The contractor would contact MCAS Yuma Range Management Division and would refrain from working in the discovery area until the MCAS Yuma Cultural Resources Manager provides input regarding the significance of the detected item(s) and instructions.

#### 2.5.4 Geological Resources

GR-1) Dirt roads and the ALZ/LZs would receive an initial application of a dust palliative. Post-grading, the roads and ALZ/LZs would receive re-applications of the dust palliative as needed.

#### 2.5.5 Water Resources

WR-1) Before grading, and consistent with maintenance of other training support areas at the BSTRC, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared in accordance with the Construction General Permit. The SWPPP would include best management practices for erosion and sedimentation controls, including techniques to diffuse and slow the velocity of stormwater. In addition, as part of the Grading Plan, an Erosion Control Plan would be prepared to include standard erosion control measures to reduce potential impacts (e.g., soil loss and sedimentation) during grading. A Notice of Intent would be submitted to the Regional Water Quality Control Board. The MCAS Yuma Range Management Department would oversee implementation and enforcement of the SWPPP.

#### 2.6 SUMMARY OF ENVIRONMENTAL CONSEQUENCES \_\_\_\_\_

In accordance with NEPA, the USMC analyzed the following resource areas potentially affected by implementation of the Proposed Action and No-Action Alternative: air quality, biological resources, cultural resources, and geological resources. Impacts to other resource areas are anticipated to be negligible or non-existent from implementation of the Proposed Action and the No-Action Alternative, and as such have not been analyzed in detail.

Table 2-2 presents a summary of the potential impacts to each resource area resulting from the implementation of the Proposed Action and the No-Action Alternative.

<b>Resource Area</b>	Proposed Action	No-Action Alternative				
Resource Areas Eliminated from Detailed Analysis						
Airspace and Air Traffic	No change in airspace. No alteration of the existing configuration of airspaces within the BSTRC. No increase in number of sorties or in the type or amount of ordnance expended. No impact to existing airspace designations and a negligible impact to airspace operations. <i>Conclusion</i> : Negligible Impact.	No change from existing conditions. Conclusion: No Impact.				
Noise	The airspace and artillery-related training noise from the Proposed Action would be consistent with existing training and not result in a discernable change in noise levels to off-installation receptors at the CMAGR and BMGR- West. There are no sensitive human receptors or residential communities in or adjacent to the project area. <i>Conclusion</i> : <b>Negligible Impact.</b>	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>				
Visual Resources	No alteration of the existing visual setting of the project area and vicinity. Use of training support areas would be visually consistent with existing training activity. <i>Conclusion</i> : Negligible Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>				
Hazardous Materials and Wastes	Potential for an inadvertent release of fuels, lubricants, coolants, or hydraulic fluids from vehicles and equipment. All hazardous materials and waste generated would continue to be managed and handled in accordance with applicable Marine Corps Air Station (MCAS) Yuma Environmental Standard Operating Procedures. Conclusion: Negligible Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>				
Utilities and Infrastructure	No increase in utility demand or impact to existing regional utilities. Grading of the combat trail to the AFA would result in an incremental increase in road infrastructure. <i>Conclusion</i> : Negligible Impact.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>				
Public Health and Safety	Potential for trespassers to interrupt training activities. Potential to encounter unexploded ordnance. Consistent with current operations. <i>Conclusion</i> : Negligible Impact.	No change from existing conditions. Conclusion: No Impact.				
Socioeconomics and Environmental Justice	No creation of new jobs. Short-term and negligible increase to the local economy during training support area development. <i>Conclusion</i> : <b>Negligible Impact.</b> The Proposed Action would be confined to the BSTRC and not adjacent to minority or low-income populations. Children (and all unauthorized people) are not allowed on lands designated for military training. <i>Conclusion</i> : <b>No Disproportionate Impact</b> to minority or low-income populations or the health and safety of children.	No change from existing conditions. <i>Conclusion</i> : <b>No Impact.</b>				

Table 2-2	<b>Summary</b>	of Environmental	Consequences

Descurses Area No. A stion Alternative						
Kesource Area		No-Action Alternative				
	No impacts to surface waters, groundwater, or waters of the U.S. All activities	No change from existing conditions.				
Water Descurres	would occur in upland areas. Low potential for erosion to result in indirect	Conclusion: No Impact.				
water Resources	mipact to water resources. Application of water-permeable dust pamative					
	Conclusion: Negligible Impact					
	No change to existing land use designations or incompatible effects to off-	No change from existing conditions				
Land Use	installation land uses	Conclusion: No Impact				
	Conclusion: No Impact.	conclusion. 1 to impact.				
	No impact to the public's ability to recreate in existing recreational areas	No change from existing conditions.				
	adjacent to the CMAGR. Potential increase in public recreation area closures	Conclusion: No Impact.				
Recreation	in BMGR-West during training.	•				
	Conclusion: Negligible Impact.					
	Short-term increase of a few (approximately 30) vehicle trips during initial	No change from existing conditions.				
Ground Transportation	grading and maintenance. No long-term increase in vehicle trips or impact to	Conclusion: No Impact.				
Ground Transportation	the existing regional surface transportation network.					
	Conclusion: Negligible Impact.					
<b>Resource Areas Analyzed in Detail</b>						
	Combined grading and operational emissions would be less than <i>de minimis</i>	No change from existing conditions.				
Air Quality	levels for all criteria pollutants.	Conclusion: No Impact.				
	Conclusion: No Significant Impact.					
	Approximately 57.7 acres of desert scrub/wash vegetation would be	No change from existing conditions.				
	permanently impacted by grading at the CMAGR. Vegetation and wildlife	Conclusion: No Impact.				
	would temporarily be impacted during training activities, including					
Biological Resources	landings/takeoffs of MV-22s. Adverse effects to the desert tortoise would be					
	minimized by implementation of CM (Section 2.5.2) and any other					
	requirements of the forthcoming BO.					
	Conclusion: No Significant Impact.	No change from anisting and this				
	No impacts to cultural resources (as defined in Chapter 3.4). MCAS Yuma is	No change from existing conditions.				
Cultural Resources	consulting with the Arizona and California State Historic Preservation Offices	Conclusion: No Impact.				
	Conclusion: No Significant Impact					
	Grading would result in alterations to topographic features. Grading and	No change from existing conditions				
	training activities would cause compaction of soils and an increase in erosion	Conclusion: No Impact				
Geological Resources	notential.	Conclusion. 1 to impuct				
	Conclusion: No Significant Impact.					

#### Table 2-2 Summary of Environmental Consequences

This page intentionally left blank.

# CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.1 APPROACH TO ANALYSIS

NEPA, CEQ regulations, and Navy and USMC procedures for implementing NEPA specify that an EA should only focus on those environmental resource areas potentially subject to impacts. In addition, the level of analysis should correspond with the anticipated level of impact. A NEPA document should consider, but not analyze in detail, those areas or resources not potentially affected by a Proposed Action. Therefore, a NEPA document should not be encyclopedic; rather, it should be succinct and to the point. Both the description and analysis in an EA should provide sufficient detail and depth to ensure that the lead agency (e.g., USMC) took a critical look at all resources potentially impacted by an action. NEPA also requires a comparative analysis that allows decision-makers and the public to differentiate among the alternatives. Thus, this EA focuses on those resources potentially subject to impacts resulting from the Proposed Action with a consideration of the potential additive (cumulative effects) of other past, present, and reasonably foreseeable actions.

This chapter presents the affected environment and potential environmental consequences for the following resource areas: air quality, biological resources, cultural resources, and geological resources. Conversely, this EA does not include a detailed analysis of the resource areas discussed in Section 3.1.1, *Resources Eliminated from Detailed Analysis* below, as the USMC anticipates that negligible or no impacts to these resource areas would occur from implementation of the alternatives.

#### 3.1.1 Resources Eliminated From Detailed Analysis

#### 3.1.1.1 Airspace and Air Traffic

Airspace that has been designated to support military training activities within the CMAGR includes restricted areas, Military Operations Areas, and military training routes, which are all depicted on aviation aeronautical charts. Restricted areas are established to conduct hazardous flight and ground-based activities such as the air-to-air and air-to-ground aircraft ordnance deliveries, explosive detonations, and infantry weapons uses at the CMAGR. Non-participating military and civilian aircraft cannot enter this airspace while activated for those hazardous activities. Figure 3.1-1 depicts the airspace within the CMAGR.

The CMAGR consists of restricted areas R-2507N, R-2507S, R-2507E, and R-2507W overlaid by the Abel North, Abel South, Abel East, Abel Bravo, and Kane East/West/South Military Operations Areas, as shown on Figure 3.1-1. The restricted area (R-2301W) associated with BMGR-West extends from the ground surface to 80,000 feet above mean sea level and supports operations from nearby military facilities, including MCAS Yuma (Figure 3.1-2).

Air traffic control for the R-2507 and R-2301 airspaces and other Special Use Areas in the project area is managed by MCAS Yuma Combined Center and Radar Approach Control. By acting as a single unit of air traffic control responsibility, MCAS Yuma enhances the safety of a myriad of training activities that take place in and around the area ranges and airspace. MCAS Yuma Station Order 3710.6J (MCAS Yuma 2013) defines the procedures and regulations for Commands using the RTAs managed by MCAS Yuma.

Establishment and Use of Training Support Areas in the BSTE



#### Figure 3.1-1. Existing Airspace and Training Support Areas within the Chocolate Mountain Aerial Gunnery Range


Establishment and Use of Training Support Areas in the BST



Figure 3.1-2. Existing Airspace and Training Support Areas within the Barry M. Goldwater Range-West



As described in Section 2.2, the Proposed Action would not increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC. Once established, the additional training support areas would add to the available training locations for MV-22 aircraft operations effectively spreading existing activity to a larger number of training support areas within the CMAGR and BMGR-West. Consistent with existing procedures, operations within the designated training support areas would be scheduled and deconflicted with other range users. Therefore, there would be no impact to existing airspace designations and a negligible impact to airspace operations and air traffic. Implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to airspace and air traffic. Accordingly, airspace and air traffic is not carried forward for detailed analysis in this EA.

# 3.1.1.2 Noise

Training activities within the BSTRC generate noise consistent with military activities (e.g., aircraft and artillery noise). Potential noise-sensitive receptors consist of a mix of residential, religious, educational, recreational, and health-related sites. The Salton Sea National Wildlife Refuge and the Salton Sea State Park, both located west of the project area, were also identified as noise-sensitive areas. The contribution to the ambient noise environment from military operations is primarily from high-speed low-flying aircraft and ordnance delivery.

The grading of the proposed training support areas would have no impact to the off-installation noise environment given their location and temporary nature of activity. Under the Proposed Action, the USMC would not increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC. In addition, the types of aircraft involved with the proposed training (e.g., MV-22 and C-130s) do not represent the dominant source of existing noise within the BSTRC. Thus, the airspace-related training noise from the Proposed Action would be consistent with existing training and not result in a discernable change in noise levels to off-installation receptors. In addition, artillery firing from the proposed AFA Burt would be consistent with existing noise sources and levels and no sensitive noise receptors are located in the area. Therefore, there would be a negligible impact to noise. Implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to noise. Accordingly, noise is not carried forward for detailed analysis in this EA.

# 3.1.1.3 Visual Resources

The Proposed Action would not alter the existing visual setting of the project area and vicinity as the setting would continue to support on-going military training. The Proposed Action would not alter the number of existing training exercises within the BSTRC. The proposed training support areas would not have a substantial vertical element (i.e., they would be flat) and would therefore not be visible off-installation. In addition, training activities would be well-within the complex and not easily visible. If observed, the activity would be consistent with existing military training. Therefore, there would be a negligible impact to visual resources. Implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to visual resources. Accordingly, visual resources is not carried forward for detailed analysis in this EA.

#### 3.1.1.4 Hazardous Materials and Wastes

Grading of the proposed training support areas would require the use of vehicles and equipment that use and generate hazardous materials and wastes. The temporary employment of vehicles and equipment under the Proposed Action would pose a small potential for an inadvertent release of fuels, lubricants, coolants, or hydraulic fluids. Any spills would be contained and properly disposed of in accordance with established local, federal, and state laws and regulations. Operationally, the Proposed Action would not result in an increase in potential impacts to or from hazardous materials or waste because there would be no increase in ordnance expenditures. All hazardous materials used, and wastes generated would continue to be managed and handled in accordance with applicable MCAS Yuma Environmental Standard Operating Procedures. According to the Safety Data Sheet for the dust palliative, the material is not considered a hazardous waste, does not contain any components that are subject to the U.S. Toxic Substance Control Act, and does not contain 0.1 percent or more of any chemical listed as a carcinogen (Soilworks 2015). Therefore, there would be a negligible impact to hazardous materials and wastes. Implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to hazardous materials and wastes.

#### 3.1.1.5 Utilities and Infrastructure

Under the Proposed Action, no utility infrastructure would be constructed because no additional utility demands would be required. Short-term power needs for the grading of the training support areas would be met by the proposed equipment and vehicles. The training support areas would not require permanent sources of lighting or other elements that would require new permanent power sources (e.g., generators or power lines). The proposed grading of the combat trail to the AFA would result in an incremental increase in road infrastructure. Therefore, there would be no impact to utilities and a negligible impact to infrastructure. Implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to utilities and infrastructure. Accordingly, utilites and infrastructure is not carried forward for detailed analysis in this EA.

#### 3.1.1.6 Public Health and Safety

The CMAGR is closed to the public. A series of signs warning unauthorized personnel not to enter the RTA are posted along the range perimeter to protect the general public from intentional or accidental entry onto the CMAGR. The signs are placed so an individual standing anywhere along the range perimeter would be able to see a sign when looking to the left or right. The warnings are written in both English and Spanish (MCAS Yuma 2017). In addition, MCAS Yuma has conducted public outreach programs to raise awareness of the military training mission at the CMAGR and the associated dangers and hazards.

Unauthorized personnel are not allowed on the CMAGR at any time, but there are occasions where trespassers or "scrappers" access the range despite patrols, arrests, verbal notices, and warning signs. Scrappers enter the CMAGR without authorization for the purpose of removing salvageable materials such as aluminum, brass, and copper. Scrappers have been known to be armed and sometimes present a danger to anyone who approach them. In accordance with Station Order 3710.6J directives, any live-fire exercises are terminated until the trespassers are removed from the range. Unauthorized personnel and vehicles found within range boundaries or spotted by either an airborne crew or authorized person is reason to abort ordnance training operations in that area, thereby interfering with training activities.

Under the Proposed Action, unauthorized persons would continue to accidentally or knowingly trespass beyond the marked boundaries of the RTAs and potentially be exposed to hazardous military training activities. Per Station Order 3710.6J directives, any live-fire exercises would continue to be terminated until the trespassers are removed from the range.

Public health and safety impacts related to grading/earthwork would primarily be associated with the potential to encounter unexploded ordnance. To minimize the risk of encountering unexploded ordnance during such activities, these areas would be swept for unexploded ordnance by EOD personnel. If during grading/earthwork any potential unexploded ordnance is discovered, work would cease immediately and MCAS Yuma EOD personnel would be contacted. Operations within the designated training support areas would be scheduled and deconflicted with other range users. Applicable MCOs, Station Orders, and Standard Operating Procedures would continue to be implemented under the Proposed Action, reducing or eliminating risks to operator health and safety. Proper range management and periodic sweeps by EOD personnel would ensure that munitions constituents and potentially dangerous foreign objects are not left behind in the proposed training support areas. Therefore, there would be a negligible impact to public health and safety. Implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to public health and safety. Accordingly, public health and safety is not carried forward for detailed analysis in this EA.

#### 3.1.1.7 Socioeconomics and Environmental Justice

Implementation of the Proposed Action would not create any new permanent jobs and no permanent or substantive change to existing economic conditions would occur. There would be a short-term and negligible increase to the local economy during training support area development; however, any increase would be indiscernible from existing conditions given the small and short-term nature of the improvements. Therefore, there would be a negligible impact to socioeconomics. Implementation of the No-Action Alternative would not change existing socioeconomic conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to socioeconomic conditions. Accordingly, socioeconomics is not carried forward for detailed analysis in this EA.

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to consider human health and environmental conditions in minority and low-income communities. EO 13045, Protection of Children from Environmental Health Risks and Safety Risks helps ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children. The project area is located within military lands restricted to the public. Children are not present and there is no permanent military family housing or civilian housing at or near the project area. Therefore, there would be no impact to minority or low-income populations. Therefore, implementation of the No-Action Alternative would not change existing conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would not have a disproportionate impact to minority or low-income populations or the health and safety of children. Accordingly, environmental justice is not carried forward for detailed analysis in this EA.

#### 3.1.1.8 Water Resources

Annual precipitation in the project area is low (approximately 3 inches [8 centimeters] per year), while the annual evaporation rate is high (approximately 70 inches [178 centimeters]) (Imperial Irrigation District 2018). Consequently, only a few permanent surface water resources (e.g., Salton Sea, Colorado River, Coachella Canal) occur in the vicinity of the project area. The majority of the interior drainage within the project area flows through ephemeral channels and unnamed washes. There are no intermittent streams or

standing bodies of water in the project area. All activities would occur in upland areas. As discussed in Section 2.4, the USMC proactively avoided siting the training support areas over existing hydrologic features. Thus, implementation of the Proposed Action would avoid direct impacts to water resources.

Before grading, and consistent with maintenance of other training support areas at the BSTRC, a SWPPP would be prepared in accordance with the Construction General Permit. The SWPPP would include best management practices for erosion and sedimentation controls, including techniques to diffuse and slow the velocity of stormwater. In addition, as part of the Grading Plan, an Erosion Control Plan would be prepared to include standard erosion control measures to reduce potential impacts (e.g., soil loss and sedimentation) during grading. A Notice of Intent would be submitted to the Regional Water Quality Control Board. The MCAS Yuma Range Management Department would oversee implementation and enforcement of the SWPPP. The application of water-permeable dust palliative would not generate additional runoff to adjacent areas. Therefore, there would be a negligible indirect impact to water resources. Implementation of the Proposed Action or No-Action Alternative would have a negligible impact to water resources. Accordingly, water resources is not carried forward for detailed analysis in this EA.

#### 3.1.1.9 Land Use

The Proposed Action would occur on and above lands owned by the federal government designated for military training. The Proposed Action would not change this designation. Surrounding land uses, which include open space, natural resource exploration, recreation, utility corridors, and transportation corridors, would not be affected or altered. Implementation of the No-Action Alternative would not change existing land use conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would not impact land use. Accordingly, land use is not carried forward for detailed analysis in this EA.

#### 3.1.1.10 Recreation

Public lands near the BSTRC offer recreational uses such as hiking, camping, bird watching, and hunting. All of the proposed training support areas would be located within the existing BSTRC boundaries, and most of them several miles within the boundaries (see Figure 2-1). The CMAGR is closed to the public. Although approximately 75 percent of the BMGR-West is open for public recreation through a permitting process (U.S. Air Force and USMC 2018), public access is restricted to those portions of the range when and where active military training operations are occurring. The establishment of additional training support areas within the BMGR-West may result in an increase in the number and duration of public closures during training for the specific areas in use. There would be no impact to the public's ability to recreate in existing recreational areas adjacent to the CMAGR. Aircraft and training-related noise would continue to be occasionally audible to persons recreating in the vicinity of the BSTRC; however, the noise types and noise levels would be similar to existing conditions. Thus, any additional impact to off-complex recreation would be negligible. Implementation of the No-Action Alternative would not change existing recreation conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to recreation. Accordingly, recreation is not carried forward for detailed analysis in this EA.

# 3.1.1.11 Ground Transportation

Implementation of the Proposed Action would generate temporary daily vehicle trips to establish ALZ Bull and for grading of the access road and combat trail to AFA Burt 2.0. Periodic vehicle trips would also occur for occasional grading maintenance of the ALZ Bull airstrip and the AFA Burt 2.0 access road and combat trail, and application of dust palliative and vegetation management. Vehicles would predominantly use

government roads to access the sites and the total number of vehicles involved would be low (approximately 30). Because the Proposed Action would not increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC, there would be no potential long-term increase in traffic volumes on roadways near the air installations from which the BSTRC training flights originate. Given the additional vehicle trips would be temporary and few, implementation of Proposed Action would not result in a permanent demand on the regional surface transportation network. Implementation of the No-Action Alternative would not change existing transportation conditions. Therefore, implementation of the Proposed Action or No-Action Alternative would have a negligible impact to ground transportation. Accordingly, ground transportation is not carried forward for detailed analysis in this EA.

# 3.2 AIR QUALITY

# **3.2.1 Definition of Resource**

Air quality is defined by ambient (outdoor) air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health, safety, and welfare of the public. Ambient air quality refers to the amount of pollutants in a specified volume of air (or the atmospheric concentration of a specific compound) that occurs at a particular geographic location. Pollutant concentration is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ( $\mu g/m^3$ ).

Primary pollutants, such as carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), lead, and some particulates are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere and their accumulation in earth's atmosphere regulates the temperature of the planet. GHGs can be emitted by natural processes and human activities, and climate change is attributed to anthropogenic sources of GHG emissions. In 2009, the USEPA signed GHG Endangerment Findings under Section 202(a) of the Clean Air Act (CAA), stating that six "key" GHGs are a threat to public health and welfare (carbon dioxide [CO<sub>2</sub>], methane [CH<sub>4</sub>], nitrous oxide [N<sub>2</sub>O], hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Since then, the USEPA has created standards and regulations for controlling GHG emissions from passenger vehicles and engines. The CEQ submitted draft guidance entitled Draft NEPA Guidance on Consideration of Greenhouse Gas Emissions (21 June 2019) (CEQ 2019), which was rescinded by EO 13990 in January 2021. This order directs the CEQ to update its final guidance entitled Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews (81 Federal Register 51866, 5 August 2016). At this time, a threshold of significance has not been established for GHG emissions, but the guidance suggests that agencies should use estimated GHG emissions in NEPA analyses as a proxy for assessing potential effects on climate change.

# 3.2.2 Affected Environment

# 3.2.2.1 Federal Requirements

The USEPA established the National Ambient Air Quality Standards (NAAQS) and there are six criteria pollutants of concern: CO, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, total suspended particulate matter less than or equal to 10 (PM<sub>10</sub>) and 2.5 (PM<sub>2.5</sub>) microns in diameter, and lead. NAAQS are classified as primary or secondary. Primary

standards protect against adverse health effects. Secondary standards protect against welfare effects, such as damage to crops, vegetation, and buildings (USEPA 2021a). The USEPA designates an area as in attainment when it complies with the NAAQS. Areas that violate these ambient air quality standards are designated as nonattainment areas. Areas that have improved air quality from nonattainment to attainment are designated as attainment/maintenance areas.

Under the Proposed Action, the primary activities that would generate air emissions would be establishing and maintaining the expeditionary landing strip at ALZ Bull and occasional grading of the access road and combat trail to AFA Burt 2.0. These activities would occur in the Imperial County portion of the CMAGR, and thus this section focuses on the affected environment for this geographic area. In addition, as needed maintenance trips would occur for the LZs established in BMGR-West located in Yuma County, and thus this section also describes the affected environment for this geographic area. Imperial County is in nonattainment (marginal) of the 8-hour O<sub>3</sub> NAAQS (which includes its precursor pollutants of volatile organic compounds (VOCs) and nitrogen oxides [NO<sub>x</sub>]), is in nonattainment (marginal) of the 8-hour O<sub>3</sub> NAAQS. Yuma County is in nonattainment (marginal) of the 8-hour O<sub>3</sub> NAAQS (USEPA 2021b). Although VOCs or NO<sub>x</sub> other than NO<sub>2</sub> have no established ambient air quality standards, they are important as precursors to O<sub>3</sub> formation. All other criteria pollutants are in attainment of the NAAQS.

#### 3.2.2.2 State/Local Requirements

The federal CAA and its subsequent amendments delegate the enforcement of the NAAQS to the states and each state is required to develop, adopt, and implement a State Implementation Plan to achieve, maintain, and enforce the federal air quality standards across the state, for areas in nonattainment of the NAAQS.

#### California

Within California, the California Air Resources Board is responsible for establishing the California Ambient Air Quality Standards (CAAQS), which in general are at least as stringent as the NAAQS, and for enforcing both the federal and state air pollution standards. As described above, portions of the Proposed Action would occur in Imperial County, which is within the jurisdiction of the ICAPCD and located in the Salton Sea Air Basin. The ICAPCD has developed air quality plans that are designed to bring the region into attainment of the national and state ambient air quality standards. Through this attainment planning process, the ICAPCD develops the ICAPCD Rules and Regulations to regulate stationary sources of air pollution in Imperial County, including Regulation VIII, which contains the rule regarding fugitive dust and fine particulate matter (ICAPCD 2021). With respect to the CAAQS, the Salton Sea Air Basin is in nonattainment of the state standards for O<sub>3</sub> and PM<sub>10</sub> (California Air Resources Board 2021b) and is in attainment of all other CAAQS criteria pollutants.

#### <u>Arizona</u>

The Arizona Department of Environmental Quality is the state agency responsible for implementing the State Implementation Plan and has adopted the federal NAAQS (Arizona Department of Environmental Quality 2021). Yuma County's attainment status for the NAAQS is presented in the previous section. Table 3.2-1 presents the NAAQS and CAAQS for the criteria pollutants.

Pollutant	Averaging Time	Natior	nal <sup>1,2</sup>	California <sup>5</sup>
Totatani Averaging Tim		Primary <sup>3</sup>	Secondary <sup>4</sup>	Concentration
	1-hour	_	_	0.09 ppm (180 μg/m <sup>3</sup> )
03	8-hour	0.07 ppm (137 μg/m <sup>3</sup> )	Same as primary	0.07 ppm (137 μg/m <sup>3</sup> )
CO	1-hour	35 ppm (40 mg/m <sup>3</sup> )		20 ppm (23 mg/m <sup>3</sup> )
	8-hour	9 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )
NO	1-hour	100 ppb (188 μg/m <sup>3</sup> )	—	0.18 ppm (339 μg/m <sup>3</sup> )
NO <sub>2</sub>	Annual	53 ppb (100 μg/m <sup>3</sup> )	Same as primary	0.03 ppm (57 μg/m³)
	1-hour	75 ppb (105 μg/m <sup>3</sup> )	_	0.25 ppm (655 μg/m <sup>3</sup> )
SO <sub>2</sub>	3-hour	—	0.5 ppm (1,300 μg/m <sup>3</sup> )	_
	24-hour	—		0.04 ppm (105 μg/m <sup>3</sup> )
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	Same as primary	$50 \ \mu g/m^3$
	Annual	—	—	$20 \ \mu g/m^3$
PM <sub>2.5</sub>	24-hour	$35 \ \mu g/m^3$	Same as primary	
	Annual	12 µg/m <sup>3</sup>	15 μg/m <sup>3</sup>	$12 \ \mu g/m^3$
Lead	Rolling 3-month period	$0.15 \ \mu g/m^3$	Same as primary	_
	30-day average	—	_	$1.5 \ \mu g/m^3$

*Notes:* μg/m<sup>3</sup> = micrograms per cubic meter; mg/m<sup>3</sup> = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million.

<sup>1</sup> Equivalent units given in parenthesis.

<sup>2</sup> National standards (other than O<sub>3</sub>, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O<sub>3</sub> standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150  $\mu$ g/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

<sup>3</sup> Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

<sup>4</sup> Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

<sup>5</sup> California standards for O<sub>3</sub>, CO (except 8-hour Lake Tahoe), SO<sub>2</sub> (1 and 24 hour), NO<sub>2</sub>, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California CFR.

Sources: USEPA 2021a; California Air Resources Board 2021a.

#### 3.2.2.3 General Conformity

Section 176(c) of the CAA, as articulated in the USEPA General Conformity Rule, states that a federal agency cannot issue a permit for or support an activity unless the agency determines that it will conform to the most recent USEPA-approved State Implementation Plan. 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 of the conformity rule are called *de minimis* levels. Table 3.2-2 identifies the federal nonattainment pollutants and the relevant *de minimis* emission thresholds.

Table 5.2-2 Applicable Criteria Fondante de minimis Levels (tons/year)						
VOCs <sup>1</sup>	$NO_x^1$	CO <sup>1</sup>	SO <sub>2</sub>	<b>PM</b> <sub>10</sub>	<b>PM</b> <sub>2.5</sub>	
100	100	NA	NA	100	100	
<i>Notes:</i> <sup>1</sup> Imperial County is in nonattainment (marginal) of the 8-hour O <sub>3</sub> NAAQS (which includes its precursor pollutants of VOCs and NO <sub>x</sub> ) is in nonattainment (moderate) of PM <sub>2</sub> s and is in maintenance (serious) of						
PM <sub>10</sub> NA	AAQS. Yuma Coun or pollutants of VOC	ty is in nonattainme s and NOx) and is in	nt (marginal) of the n nonattainment (mo	8-hour O <sub>3</sub> NAAQS derate) of PM <sub>10</sub> NA	(which includes its AQS.	
NA = nc	ot applicable because	the county is curren	tly in attainment of	the NAAOS for thes	e criteria pollutants.	

<b>Fable 3.2-2</b>	Applicable	<b>Criteria Pollutant</b>	de minimis Levels	(tons/year)	
				(	

NA = not applicable be Source: USEPA 2021b.

A conformity applicability analysis is required for each of the nonattainment pollutants or its precursor emissions. Compliance with the conformity rule can be demonstrated in several ways. 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. If net emissions exceed the relevant *de minimis* level, a formal CAA Conformity Determination process must be followed.

#### 3.2.2.4 Greenhouse Gases

To estimate global warming potential, which is the heat trapping capacity of a gas, the U.S. quantifies GHG emissions using the 100-year timeframe values established in the Intergovernmental Panel on Climate Change Fourth Assessment Report (Intergovernmental Panel on Climate Change 2007).

### **3.2.3** Environmental Consequences

The air quality analysis for this EA focuses on the estimated emissions of VOCs,  $NO_x$  (both are precursors to the formation of  $O_3$ ), CO, SO<sub>2</sub>,  $PM_{10}$ , and  $PM_{2.5}$ . Air quality impacts from grading activities under the Proposed Action would primarily occur from combustive emissions due to the use of fossil fuel-powered equipment and fugitive dust emissions ( $PM_{10}$  and  $PM_{2.5}$ ) from the operation of equipment on exposed soil. The only change in operational emissions would result from establishment of an occasional maintenance activities for ALZ Bull and AFA Burt 2.0, as the number of sorties and types of training activities would not change from existing conditions.

Grading emissions were estimated using the California Emissions Estimator Model, developed by the California Air Pollution Officers Association. The California Emissions Estimator Model is the current comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model includes default data (e.g., emission factors, trip lengths, meteorology, source inventory) that have been provided by the various California air districts to account for local requirements and conditions (California Air Pollution Officers Association 2021). For this analysis, default data were overridden in the model by project-specific data (as provided in Chapter 2), when available.

Assumptions were made regarding the total number of days each piece of equipment would be used and the number of hours per day each type of equipment would be used. Assumptions and model inputs are located within the modeling calculations in Appendix B. Operational emissions from the as needed maintenance and application of dust palliative were estimated based on the representative equipment needed to complete the proposed maintenance activities, as described in Chapter 2.

#### 3.2.3.1 Proposed Action

Grading emissions from the Proposed Action would exclusively occur within the CMAGR from the grading activities to establish ALZ Bull and the access road and combat trail to AFA Burt 2.0. Operational emissions would originate on an irregular basis and would include the occasional grading maintenance of the ALZ Bull airstrip and the AFA Burt 2.0 access road and combat trail. Application of the dust palliative would be done on an as needed basis, as described in Section 2.2. However, for estimating the operational emissions, it was assumed this would occur twice per year and require one truck to apply the dust palliative. In addition, vehicle trips would be required for the as needed vegetation management of the areas identified in Section 2.2.

Table 3.2-3 presents a summary of the annual estimated emissions associated with grading and earthwork activities at the CMAGR under the Proposed Action. Emission calculations are provided in Appendix B. As shown in Table 3.2-3, estimated emissions from grading and earthwork activities would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule. A Record of Non-Applicability for CAA Conformity is provided in Appendix B.

					e onii or nii	J	
Emission Source	Emissions (tons/year)						
Emission Source	VOCs	NO <sub>x</sub>	СО	SO <sub>2</sub>	<b>PM</b> 10	<b>PM</b> <sub>2.5</sub>	
Proposed Action – Initial Grading							
Year – 2022	0.15	1.56	1.19	0.003	0.34	0.20	
<b>Proposed Action - Operations</b>	Proposed Action - Operations						
Year – Beginning 2023	0.0014	0.0118	0.0083	0.0000	0.0004	0.0004	
Conformity de minimis Limits	100	100	NA	NA	100	100	
Exceeds Conformity de minimis Limits?	No	No	No	No	No	No	

<b>Fable 3.2-3</b>	Proposed Action within the CMAGR with Ev	aluation of Conformity
	Troposed Retion within the Control with Ly	aluation of Comorning

*Note*: NA = not applicable.

Table 3.2-4 presents the annual GHG emissions that would occur from initial grading and operations of the Proposed Action.

Emission Source	Emissions (metric tons/year)					
Emission Source	<i>CO</i> <sub>2</sub>	CH <sub>4</sub>	$N_2O$	CO <sub>2</sub> e		
Proposed Action – Initial Grading						
Year - 2022	223.40	0.07	0.00	225		
Proposed Action - Operations						
Year – Beginning 2023	2.90	0.00	0.00	3		

 Table 3.2-4
 Proposed Action Grading and Operational GHG Emissions

The potential effects of proposed GHG emissions are by nature global and may result in cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. As a point of comparison, the GHGs from grading activities under the Proposed Action would represent 0.00005 percent of California's statewide GHG emissions.

During grading activities, proper and routine maintenance of all vehicles and other equipment would be implemented to ensure that emissions are within the design standards of all equipment. ICAPCD Rule 800 would be followed to minimize potential fugitive dust emissions by implementing measures to reduce particulate matter emissions (e.g., watering of exposed soils, soil stockpiling, and soil stabilization) during grading (ICAPCD 2012). This includes the preparation of a fugitive dust control plan before grading. In addition, the application of the dust palliative on an as needed basis for maintenance, as described in Chapter 2, would help reduce the amount of dust generated during the operational phase.

Operational emissions for the BMGR-West generated from the nonscheduled, as needed dust palliative application for LZs and the as deemed necessary vegetation maintenance for LZs, would be less than those identified for the operational emissions for the CMAGR in Table 3.2-3. Maintenance would not be required for any DZs at the BMGR-West and any maintenance for the LZs, prior to training exercises, would be completed on an as needed basis.

Given that emissions from the Proposed Action would be below *de minimis* thresholds, and that windblown dust and sand generated by wind, mining operations, off-road vehicle use, and military training activities regularly occur in desert environments, the amount of dust over baseline levels generated by the Proposed Action would be negligible. Therefore, implementation of the Proposed Action would have no significant impact on air quality.

#### 3.2.3.2 No-Action Alternative

Under the No-Action Alternative, the proposed LZs, ALZ, DZs, and AFA within the BSTRC would not be established, and current training operations within the CMAGR and BMGR-West would persist. Existing conditions would remain as described in Section 3.2.2. Therefore, no impacts to air quality would occur under the No-Action Alternative.

# 3.3 BIOLOGICAL RESOURCES \_\_\_\_\_

# **3.3.1 Definition of Resource**

Biological resources include plant and animal species and the habitats within which they occur. This analysis focuses on species that are important to the function of ecosystems, are of special societal importance, or are protected under federal or state law. These resources are commonly divided into the following categories: *Plant Communities, Wildlife*, and *Special Status Species*.

Biological resources are grouped and analyzed in this EA as follows:

- *Plant Communities* include plant associations and dominant constituent species that occur in the action area. Special status plant species are discussed in more detail below.
- *Wildlife* includes the characteristic animal species that occur in the action area. Special consideration is given to bird species protected under the Migratory Bird Treaty Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special status wildlife species are discussed in more detail below.
- *Special Status Species* are defined in this EA as species that are listed, have been proposed for listing, or are candidates for listing as threatened or endangered under the federal Endangered Species Act, the California Endangered Species Act, and other species of concern as recognized by state or federal agencies.

The action area for biological resources includes the proposed training support areas (see Figure 2-1) and immediately adjacent lands that may experience noise, visual, other physical, or indirect impacts.

# **3.3.2** Affected Environment

Areas owned, controlled, or designated for use by the Department of Defense are excluded from critical habitat designation where an Integrated Natural Resources Management Plan (INRMP) has been developed that, as determined by the Navy, Department of Interior Secretary or Department of Commerce Secretary, provides a benefit to the species subject to critical habitat designation. MCAS Yuma (2017) and BMGR

(2018) have prepared and follow INRMPs for their respective areas. The INRMPs provide an implementable framework for managing natural resources on the land while executing the military mission.

#### 3.3.2.1 Plant Communities

#### Chocolate Mountain Aerial Gunnery Range

Vegetation at the CMAGR is typical of the Colorado Desert region, which is widespread creosote desert scrub with expansive dry desert washes. There are three basic categories of landforms within the CMAGR: (1) rocky slopes and ridges; (2) large washes; and (3) alluvial terraces with runnels (small channels) and minor washes (MCAS Yuma 2017). Rocky slopes and alluvial terrace landforms are dominated by desert scrub plants such as creosote bush (*Larrea tridentata*), desert ironwood (*Olneya tesota*), brittlebush (*Encelia farinosa*), white bursage (*Ambrosia dumosa*), ocotillo (*Fouquieria splendens*), and Munz's cholla (*Cylindropuntia munzii*) (MCAS Yuma 2017). Washes at the CMAGR are dominated by desert ironwood, and blue paloverde (*Parkinsonia florida*). Large shrubs along the washes include graythorn (*Ziziphus obtusifolia* var. *canescens*), wolfberry (*Lycium* sp.), and desert lavender (*Hyptis emoryi*) (MCAS Yuma 2017).

#### Barry M. Goldwater Range-West

The majority of the BMGR-West vegetation is part of the Mojave-Sonoran Semi-Desert Scrub Macrogroup, which covers most of the Mojave and Sonoran deserts in the southwestern U.S. Within this macrogroup, there are six alliances, including creosote, bursage, saltbush, brittlebush, watercourse, and blue paloverde. The creosote and bursage alliances dominate the land area within the BMGR-West (U.S. Air Force and USMC 2018). Common plant species across the BMGR-West include creosote bush, bursages (*Ambrosia* spp.), acacias (*Acacia* spp.), paloverdes, mesquites (*Prosopis* spp.), cacti, and a variety of grasses (U.S. Air Force and USMC 2018).

#### 3.3.2.2 Wildlife

#### Chocolate Mountain Aerial Gunnery Range

As a consequence of the harsh climatic extremes, limited habitat resources, and regional geographic barriers in the Colorado Desert, the diversity and density of animal species in the CMAGR is typically low relative to other deserts such as the Sonoran and Mojave deserts (MCAS Yuma 2017). Nearly all migratory and resident birds occurring at the CMAGR are protected under the Migratory Bird Treaty Act.

General wildlife species known to occur at the CMAGR include the great basin whiptail lizard (*Aspidoscelis tigris tigris*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard (*Phrynosoma platyrhinos*), common side blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), sidewinder (*Crotalus cerastes*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*), black-chinned sparrow (*Spizella atrogularis*), common raven (*Corvus corax*), black-tailed gnatcatcher (*Polioptila melanura*), phainopepla (*Phainopepla nitens*), ash-throated flycatcher (*Myiarchus cinerascens*), big brown bat (*Eptesicus fuscus*), kit fox (*Vulpes macrotis*), Merriam's kangaroo rat (*Dipodomys merriami*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*) (MCAS Yuma 2017).

#### Barry M. Goldwater Range-West

Wildlife found at the BMGR-West is typical of that found in the Sonoran Desert ecosystem (U.S. Air Force and USMC 2018). As with the CMAGR, nearly all migratory and resident birds occurring at the BMGR-West are protected under the Migratory Bird Treaty Act.

General wildlife species known to occur at the BMGR-West include zebra-tailed lizard, desert iguana, longtailed brush lizard (*Urosaurus graciosus*), western whiptail lizard (*Cnemidophorus tigris*), sidewinder, western shovel-nosed snake (*Chionactis occipitalis*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), greater roadrunner (*Geococcyx californianus*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), killdeer (*Charadrius vociferus*), black-throated sparrow (*Amphispiza bilineata*), Costa's hummingbird (*Calypte costae*), great-tailed grackle (*Quiscalus mexicanus*), black-tailed jackrabbit, kangaroo rats (*Dipodomys spp.*), round-tailed ground squirrel (*Spermophilus tereticaudus*), coyote, kit fox, and mule deer (U.S. Air Force and USMC 2018).

#### 3.3.2.3 Special Status Species

#### Chocolate Mountain Aerial Gunnery Range

The only federally listed species known to or likely to occur within the CMAGR portion of the action area is the Mojave desert tortoise (*Gopherus agassizii*) (hereafter, desert tortoise) (see Table 3.3-1). Approximately 40 percent of the CMAGR occurs within designated desert tortoise critical habitat. Approximately 642.1 acres of the 1,410.6-acre CMAGR portion of the action area (or 45.5 percent) occur within critical habitat. While not all the proposed training support areas are located within designated critical habitat, they all contain the physical and biological features of desert tortoise critical habitat as described by USFWS (2019). The endangered southwestern willow flycatcher (*Empidonax traillii extimus*) is known to be a transient visitor to the CMAGR but requires dense riparian habitats that do not occur in the action area.

In support of the Proposed Action, focused desert tortoise surveys were conducted in March 2021 throughout the entirety of the proposed training support areas at the CMAGR (Naval Facilities Engineering Systems Command [NAVFAC] Southwest 2021). The results of focused desert tortoise surveys are incorporated below by reference and are included as an appendix to the Biological Assessment prepared for the Proposed Action (refer to Appendix A).

Common Name Scientific Name	Federal Status	State Status	Habitat
PLANTS			
Harwood's milk-vetch (Astragalus insularis var. harwoodii)	None	CRPR 2B.2	Desert dunes, desert wash, desert scrub
Emory's crucifixion-thorn ( <i>Castela emoryi</i> )	None	CRPR 2B.2	Creosote scrub, bajadas, dry washes
Sand evening-primrose (Chylismia arenaria)	None	CRPR 2B.2	Desert scrub
Las Animas colubrina (Colubrina californica)	None	CRPR 2B.3	Desert wash, desert scrub
Deep Canyon snapdragon (Pseudorontium cyathiferum)	None	CRPR 2B.3	Desert scrub, rocky habitats
Orocopia sage (Salvia greatae)	None	CRPR 1B.3	Desert scrub
Desert spike-moss (Selaginella eremophila)	None	CRPR 2B.2	Desert scrub, rocky habitats
REPTILES			
Desert tortoise (Gopherus agassizii) <sup>1</sup>	Т	Т	Desert scrub

 Table 3.3-1
 Special Status Species Potentially Occurring in the CMAGR Action Area

StatusStatusMAMMALSPallid bat (Antrozous pallidus)NoneSSCDesert wash, desert scrub, riparian woodlandWestern mastiff bat (Eumops perotis californicus)NoneSSCVarious habitatsWestern yellow bat (Lasiurus xanthinus)NoneSSCDesert washPocketed free-tailed bat (Nyctimomps femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCDesert dunes, desert scrubTaxidea taxus)NoneSSCDesert dunes, desert scrubBRDSCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athere cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresVaux's swift (Chaetura vauxi)NoneSSCGrasslands, desert scrub, woodlands, agricultural	Common Name Scientific Name	Federal	State	Habitat
Pallid bat (Antrozous pallidus)NoneSSCDesert wash, desert scrub, riparian woodland(Antrozous pallidus)NoneSSCVarious habitats(Eumops perotis californicus)NoneSSCVarious habitats(Lasiurus xanthinus)NoneSSCDesert washPocketed free-tailed bat (Nyctinomops femorosaccus)NoneSSCRiparian scrub, desert scrub(Nyctinomops femorosaccus)NoneSSCVarious habitatsYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCDesert dunes, desert scrubAmerican badger 	MAMMALS	Status	Status	
(Antrozous pallidus)FrenceWestern mastiff bat (Eumops perotis californicus)NoneSSCVarious habitatsWestern yellow bat (Lasiurus xanthinus)NoneSSCDesert washPocketed free-tailed bat (Nyctinomops femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCDesert washAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert scrubBIRDSCooper's hawk (Accipiter cooperil)NoneSSCDesert dunes, desert wash, desert scrubGolden eagle Burrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasGolden eagle (Burto swinstori)BCCSSCDesert scrub, grasslands, agricultural areasGolden eagle (Burto swinstori)BCCSSCDesert scrub, grasslands, agricultural areasGolden eagle (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Bteto swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structures(Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areas(Falco columbarius)NoneWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lauius thudovicianus)1BCCSSCDesert wash, desert scrub, riparian woodland	Pallid bat	None	SSC	Desert wash, desert scrub, riparian woodland
Western mastuff bat (Eumops perotis californicus)NoneSSCVarious habitats(Eumops perotis californicus)NoneSSCDesert wash(Lasiurus xanthinus)NoneSSCRiparian scrub, desert scrubPocketed free-tailed bat (Nyetinomops femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIBDCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle Burrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chattura vauxi)NoneWLGrasslands, desert scrub, agricultural areasVaux's swift (Chattura vauxi)NoneSSCTVaux's swift (Chattura vauxi)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco columbarius)BCCWLGrasslands, desert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus) <sup>1</sup> BCCSSCDesert wash, desert scrub, riparian woodland	(Antrozous pallidus)		220	
(Elimops periodic Californicus)NoneSSCDesert washWestern yellow bat (Lasiurus xanthinus)NoneSSCDesert washPocketed free-tailed bat (Nyctinomops femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSEcoper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Authene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Bute o swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco oclumbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)'BCCSSCDesert wash, desert scrub, riparian woodland	Western mastiff bat	None	SSC	Various habitats
Western yearlow bat (Lasiurus xanthinus)NoneSSCDesert wash(Lasiurus xanthinus)NoneSSCRiparian scrub, desert scrubPocketed free-tailed bat (Nyctinomops femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSEncodent encodent enc	(Eumops perons canfornicus)			
Decketed free-tailed bat (Nyctinomops femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasVaux's swift (Chaetura vauxi)NoneWLGrasslands, desert scrub, agricultural areasVaux's swift (Falco columbarius)NoneWLGrasslands, desert scrub, agricultural areasMerlin (Falco mexicanus)BCCWLBcrasslands, desert scrub, grasslands, agricultural areasMerlin (Falco mexicanus)BCCSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco mexicanus)BCCWLGrasslands, desert scrub, woodlands, agricultural areasIdentifies (Falco mexicanus)BCCSSCDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)^1BCCSSCDesert wash, desert scrub, riparian woodland	(Lasiurus ranthinus)	None	SSC	Desert wash
NoneSSCRiparian scrub, desert scrub(Nyctinomops femorosaccus)NoneSSCRiparian scrub, desert scrubYuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasVaux's swift (Buteo swainson')NoneSSCForages over many habitats, nests in tree cavities and artificial structuresVaux's swift (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasMerlin (Falco mexicanus)BCCWLDesert scrub, grasslands, agricultural areasIntervine (Falco mexicanus)BCCSSCErasslands, desert scrub, agricultural areasIntervine (Falco mexicanus)BCCWLGrasslands, desert scrub, woodlands, agricultural areasIntervine (Falco mexicanus)BCCSSCDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus) <sup>1</sup> BCCSSCDesert wash, desert scrub, riparian woodland	Pocketed free-tailed bat			
Yuma hispid cotton rat (Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSVarious habitatsDesert dunes, desert wash, desert scrubCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Falco columbarius)NoneWLGrasslands, desert scrub, agricultural areasMerlin (Falco mexicanus)BCCWLGrasslands, desert scrub, woodlands, agricultural areasImage: Columbarius of the function of the functio	(Nyctinomops femorosaccus)	None	SSC	Riparian scrub, desert scrub
(Sigmodon hispidus eremicus)NoneSSCVarious habitatsAmerican badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCSSCDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)^1BCCSSCDesert wash, desert scrub, riparian woodland	Yuma hispid cotton rat	NT	000	X7 · 1 1 · 4
American badger (Taxidea taxus)NoneSSCDesert dunes, desert wash, desert scrubBIRDSCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresPrairie falcon (Falco mexicanus)BCCWLGrasslands, desert scrub, woodlands, agricultural areasLoggerhead shrike (Lanius ludovicianus) <sup>1</sup> BCCSSCDesert wash, desert scrub, grasslands, cliffs	(Sigmodon hispidus eremicus)	None	SSC	Various habitats
(Taxidea taxus)INNESSCDescrit duries, descrit durie	American badger	None	SSC	Desert dunes, desert wash, desert scrub
BIRDSCooper's hawk (Accipiter cooperii)NoneWLWoodlands, agricultural areasGolden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus) <sup>1</sup> BCCSSCDesert wash, desert scrub, riparian woodland	(Taxidea taxus)	Ivone	550	Desert duries, desert wash, desert serub
$\begin{array}{c c} Cooper's hawk \\ (Accipiter cooperii) \\ \hline \end{tabular} None \\ (Accipiter cooperii) \\ \hline \end{tabular} BCC, \\ BGEPA \\ \hline \end{tabular} BCC, \\ BGEPA \\ \hline \end{tabular} BCC $	BIRDS	T	r	
(Accipiter cooperil)BCCBCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)^1BCCSSCDesert wash, desert scrub, riparian woodland	Cooper's hawk	None	WL	Woodlands, agricultural areas
Golden eagle (Aquila chrysaetos)BCC, BGEPAFPForages in grassy and open shrub habitats, nests on cliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)^1BCCSSCDesert wash, desert scrub, riparian woodland	(Accipiter cooperii)			
(Aquita chrysaetos)BGEPACliffs and large treesBurrowing owl (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus) <sup>1</sup> BCCSSCDesert wash, desert scrub, riparian woodland	Golden eagle	BCC,	FP	Forages in grassy and open shrub habitats, nests on
Burrowing owi (Athene cunicularia)BCCSSCDesert scrub, grasslands, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus) <sup>1</sup> BCCSSCDesert wash, desert scrub, riparian woodland	(Aquila chrysaetos)	BGEPA		cliffs and large trees
(Americe cumcularity)BCCTGrasslands, desert scrub, agricultural areasSwainson's hawk (Buteo swainsoni)BCCTGrasslands, desert scrub, agricultural areasVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)^1BCCSSCDesert wash, desert scrub, riparian woodland	Burrowing owi (Athena cumicularia)	BCC	SSC	Desert scrub, grasslands, agricultural areas
Swainson's hawkBCCTGrasslands, desert scrub, agricultural areas(Buteo swainsoni)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresVaux's swift (Chaetura vauxi)NoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin 	(Amene cunicularia)			
Vaux's swiftNoneSSCForages over many habitats, nests in tree cavities and artificial structuresMerlin ( <i>Falco columbarius</i> )NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon ( <i>Falco mexicanus</i> )BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike ( <i>Lanius ludovicianus</i> )^1BCCSSCDesert wash, desert scrub, riparian woodland	(Buteo swainsoni)	BCC	Т	Grasslands, desert scrub, agricultural areas
NoneSSCForges over many methads, near in accounter and artificial structuresMerlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)^1BCCSSCDesert wash, desert scrub, riparian woodland	Vaux's swift			Forages over many habitats nests in tree cavities and
Merlin (Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)1BCCSSCDesert wash, desert scrub, riparian woodland	(Chaetura yauxi)	None	SSC	artificial structures
(Falco columbarius)NoneWLGrasslands, desert scrub, woodlands, agricultural areasPrairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)1BCCSSCDesert wash, desert scrub, riparian woodland	Merlin	N	3371	
Prairie falcon (Falco mexicanus)BCCWLDesert scrub, grasslands, cliffsLoggerhead shrike (Lanius ludovicianus)1BCCSSCDesert wash, desert scrub, riparian woodland	(Falco columbarius)	None	WL	Grasslands, desert scrub, woodlands, agricultural areas
(Falco mexicanus)BCCWLDesert scrub, grassiands, chilsLoggerhead shrike (Lanius ludovicianus)1BCCSSCDesert wash, desert scrub, riparian woodland	Prairie falcon	DCC	WI	Desaut samily grosslands sliffs
Loggerhead shrike (Lanius ludovicianus)1BCCSSCDesert wash, desert scrub, riparian woodland	(Falco mexicanus)	всс	WL	Desert scrub, grassiands, chils
(Lanius ludovicianus) <sup>1</sup> Dec 55e Desert wash, desert seruo, riparian woodiand	Loggerhead shrike	BCC	SSC	Desert wash desert scrub, riparian woodland
	(Lanius ludovicianus) <sup>1</sup>	всс	350	Desert wash, desert serub, riparian woodiand
Gila woodpecker BCC E Desert scrub rinarian woodlands dry desert washes	Gila woodpecker	BCC	Е	Desert scrub riparian woodlands dry desert washes
(Melanerpes uropygialis) <sup>1</sup>	(Melanerpes uropygialis) <sup>1</sup>	200		
Crissal thrasher None SSC Desert scrub and washes	Crissal thrasher	None	SSC	Desert scrub and washes
(Ioxostoma crissale) <sup>•</sup>	( <i>Ioxostoma crissale</i> ) <sup>*</sup>			
(Toxostoma lacontai) None SSC Desert scrub, mesquite, riparian	(Torostoma lacortai)	None	SSC	Desert scrub, mesquite, riparian

<b>Table 3.3-1</b>	Special Status S	pecies Potentially	y Occurring	in the	CMAGR .	Action Area
--------------------	------------------	--------------------	-------------	--------	---------	-------------

Notes: <sup>1</sup>Species observed during desert tortoise surveys conducted for this project (NAVFAC Southwest 2021).

Status: <u>Federal</u> (determined by USFWS): T = Threatened, E = Endangered, BCC = Bird of Conservation Concern, BGEPA = Bald and Golden Eagle Protection Act.

State: T = Threatened, R = Rare, SSC = Species of Special Concern, WL = Watch List,

FP = Fully Protected.

California Rare Plant Ranks (CRPR) created by the California Native Plant Society (CNPS):

2B - Plants rare, threatened, or endangered in California, but more common elsewhere

CNPS Threat Ranks

0.2 - Moderately threatened in California (20-80 percent occurrences threatened)

0.3 - Not very threatened in California (<20 percent of occurrences threatened, or no current threats known)

Sources: USMC 2016; MCAS Yuma 2017; California Native Plant Society 2021; California Department of Fish and Wildlife 2021.

The desert tortoise occurs within a variety of desert scrub vegetation types; however, the primary characteristic plant community is creosote bush scrub (USFWS 2011). They occur from sea level to an elevation of 7,300 feet; however, the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet. Tortoises dig their own burrows and spend much of their lifetime in these burrows (USFWS 2011).

The greatest threat to the desert tortoise is habitat loss and degradation caused by human activities including urbanization, agricultural development, military training, recreational use, mining, livestock grazing, and a lack of regulatory mechanisms (USFWS 2011). Other known threats to the species include predation by common ravens, canids (e.g., coyotes, kit foxes, and dogs [Canis familiaris]), and golden eagles; collection by humans for pets or consumption; fire; collisions with vehicles on paved and unpaved roads; and mortality resulting from disease (e.g., upper respiratory tract disease) (USFWS 2011).

During desert tortoise surveys conducted in March 2021, desert tortoise individuals or sign (shell fragments, bones, scutes, carcasses, drinking depressions, mating rings, scat, burrows, and/or tracks) were observed within all of the proposed training support areas at the CMAGR except the proposed ALZ Bull (NAVFAC Southwest 2021) (see Appendix A). Desert tortoise surveys represent a snapshot in time to document desert tortoise occurrence and/or use of the survey areas. Lack of occurrence or sign within a given area does not preclude individual tortoises from utilizing or occurring in that area in the future. With regard to desert tortoises on the CMAGR, the incidental take of desert tortoises during military training throughout CMAGR is authorized in the 1996 BO (USFWS 1996). In addition, MCAS Yuma is consulting with the USFWS under section 7 of the Endangered Species Act regarding the potential impacts of the Proposed Action on the desert tortoise.

Other special status species with the potential to occur in the CMAGR action area, including rare plant species and wildlife species recognized as species of special concern by the California Department of Fish and Wildlife, are presented in Table 3.3-1. No populations of rare plant species are known to occur within the proposed training support areas, although individuals may occur. The majority of special status wildlife listed in Table 3.3-1 would potentially occur transiently in the CMAGR action area either during migration, for foraging, or during localized movement.

#### Barry M. Goldwater Range-West

The Sonoran pronghorn (Antilocapra americana sonoriensis) is the only federally listed species known to occur at the BMGR-West (U.S. Air Force and USMC 2018). However, the proposed training support areas at the BMGR-West are not within the known range of the Sonoran pronghorn, as the species only occupies the eastern portion of the BMGR-West. Special status species that potentially occur in the proposed training support areas at the BMGR-West are listed in Table 3.3-2. The reptiles in Table 3.3-2 have a low likelihood of occurrence in the action area because of lack of habitat. Bat species in Table 3.3-2 may utilize the action area for foraging, but would not roost in the action area due to lack of habitat.

Table 5.5-2 Special Status Species Fotentiany Occurring in the DWGR-west Action Area					
Common Name Scientific Name	Federal Status	State Status	Habitat		
REPTILES					
Desert rosy boa ( <i>Lichanura trivirgata gracia</i> )	None	SGCN	Rocky areas in desert ranges, especially canyons with water		
Mexican rosy boa ( <i>Lichanura trivirgata trivirgata</i> )	None	SGCN	Rocky mountains or hillsides in desert ranges		
Flat-tailed horned lizard ( <i>Phrynosoma mcallii</i> )	None	SGCN	Creosote flats, sand dunes, mud hills (known habitat at BMGR-West is outside of the action area)		
MAMMALS					
Spotted bat (Euderma maculatum)	None	SGCN	Riparian areas, rocky cliffs		
Western mastiff bat ( <i>Eumops perotis californicus</i> )	None	SGCN	Various habitats		
California leaf-nosed bat (Macrotus californicus)	None	SGCN	Roosts in caves or mines. Forages in desert scrub or desert riparian.		

Table 3.3-2	Special Status S	pecies Potentially	Occurring in the	BMGR-West Action Area
-------------	------------------	--------------------	------------------	-----------------------

Common Name Scientific Name	Federal Status	State Status	Habitat		
Birds					
Ferruginous hawk (Buteo regalis)	None	SGCN	Arid to semiarid regions, grasslands		
Peregrine falcon ( <i>Falco peregrinus anatum</i> )	BCC	SGCN	Isolated cliffs; winter migrant		
Le Conte's Thrasher ( <i>Toxostoma lecontei</i> )	BCC	SGCN	Desert scrub, mesquite, riparian		

#### Table 3.3-2 Special Status Species Potentially Occurring in the BMGR-West Action Area

*Notes:* Status: Federal (determined by USFWS): BCC = Bird of Conservation Concern.

State: SGCN = Species of Greatest Conservation Need (Arizona).

Source: U.S. Air Force and USMC 2018.

#### **3.3.3** Environmental Consequences

#### 3.3.3.1 Proposed Action

#### Plant Communities

#### Chocolate Mountain Aerial Gunnery Range

Under the Proposed Action, up to 12.9 acres (ALZ Bull) and 44.8 acres (access road and combat trail for AFA Burt 2.0) of desert scrub/wash vegetation would be permanently impacted by initial grading and routine maintenance grading. In total, 57.7 acres of desert scrub/wash impacts would represent a low level of impact to the roughly 459,000 acres of habitat present at the CMAGR (0.01 percent). In addition, plant communities throughout the action area are sparsely vegetated and very little plant life would be directly impacted by project grading.

Vehicle use and artillery training at AFA Burt 2.0 could result in the crushing, breaking, and removal of plants; a reduction of overall vegetative cover; and the erosion and/or compaction of topsoil. Particulate matter, fugitive dust, and/or sediment generated by vehicle and artillery use can reduce the photosynthetic capacity of affected plants, potentially reducing growth and vigor (Ouren et al. 2007). However, dust can increase net photosynthesis early in the growing season (when water is more available) by increasing leaf temperature (Upekala et al. 2009). Overall, particulate matter generation associated with vehicle use and ordnance deployment is expected to cause plant productivity to decrease in localized areas. However, windblown dust and sand regularly occur in desert environments. As such, based on the localized nature of the impacts, the amount of dust over baseline levels generated by the Proposed Action would be negligible.

Biannual vegetation trimming within MV-22 landing sites at LZs and ALZ Bull would be conducted in accordance with the CMs listed in Section 2.5 and would not involve complete removal of vegetation. The majority of vegetation within the LZs and ALZ Bull would not be impacted by vegetation trimming. Where vegetation is trimmed, no plants would be intentionally uprooted or removed and trimming would be done with hand tools.

MV-22 training at LZs, as well as aircraft landings/takeoffs at ALZ Bull, would result in the temporary disturbance of loose surface debris and soil. MV-22 downdraft and outwash from moving rotors (collectively known as rotorwash) in the vicinity of takeoffs, landings, and near-surface hovering, could impact vegetation and soils. Rotorwash forces are relative to the engine power settings and the aircraft's proximity to the ground. Wind velocities could reach over 100 miles per hour directly below the MV-22 when hovering at 100 feet above ground level (Marine Corps Installations West 2009 as cited in USMC 2013).

Typical effects resulting from MV-22 rotorwash can range from windblown vegetation to broken branches in shrubs and trees (USMC 2013). Dust cloud development from the displacement of top soil and loose vegetation is another common effect from rotorwash. The intensity of these effects is proportional to the amount of time the area is exposed to these high velocity winds and the amount of vegetation that actually occur within a given landing area (USMC 2013).

Effects on vegetation from the use of MV-22s would be minor as (1) they would be localized under the landing sites; (2) pilots would avoid landing sites with vegetation or other vertical obstacles as much as possible; (3) LZs are sparsely vegetated; (4) the USMC anticipates that most MV-22 landing operations, such as insertions/extractions, would take less than 3 minutes; (5) effects associated with MV-22 landings would otherwise be similar to those of legacy rotary-wing aircraft currently operating at the CMAGR; (6) MV-22 aircrews can throttle back to 75 percent of engine power, and maintain a 75-degree angle to the nacelles, while on the ground to substantially reduce rotorwash wind speeds and deconcentrate engine heat exhaust; and (7) exhaust deflectors would automatically be deployed when on the ground.

Despite the aforementioned considerations, ground disturbance associated with training activities would likely reduce the cover and productivity of native plant communities. However, the area of vegetation that would potentially be disturbed under the Proposed Action comprises a small portion of the CMAGR. In addition, training in the proposed support areas would offset training impacts that are currently occurring in other areas of the BSTRC because there would be no overall change in training tempo. Therefore, impacts to plant communities under the Proposed Action would be less than significant.

#### Barry M. Goldwater Range-West

Under the Proposed Action, impacts to plant communities at the BMGR-West would be minimal. Use of DZs would not entail any grading or ground maintenance. Delivery of small-unit parachute operations (personnel and cargo pallets) to the DZs could cause minor temporary impacts to individual plants, but operations would intentionally be carried out in sparsely vegetated portions of the DZs to avoid vegetation. Use of proposed LZs at the BMGR-West for MV-22 training would have similar impacts as described above for the CMAGR. However, the proposed LZs at the BMGR-West occur in and in the vicinity of the Yodaville Urban Training Complex, where there is an existing high level of training disturbance and surrounding vegetation is sparse (see Figure 2-3). Therefore, impacts to plant communities at the BMGR-West would be less than significant.

#### Wildlife

# Chocolate Mountain Aerial Gunnery Range

Impacts to wildlife associated with grading at ALZ Bull and the access road and combat trail to AFA Burt 2.0 would include temporary and, to a lesser degree, permanent displacement of a small number of birds, reptiles, and small mammals from the approximately 57.7 acres of habitat (see Table 2-1). The majority of wildlife individuals would move away from the grading areas to adjacent similar habitats. Smaller, less mobile species, and those seeking refuge in burrows (e.g., rodents and reptiles) could inadvertently be killed during grading activities; however, long-term, permanent impacts to populations of such species would not result because these species are abundant in surrounding areas and would rapidly repopulate suitable habitat within the affected area. Grading would not present major barriers to dispersal, and once completed, would not prevent normal life behaviors.

Vehicle and aircraft movement and ordnance/artillery use associated with training could result in wildlife injury/mortality and loss of habitat. All proposed training support areas would be infrequently used, and

when not in use, would not present barriers to wildlife movement in areas already characterized by naturally occurring sparse vegetation.

A considerable number of bird species that utilize resources in the action area do so during migration or as passing vagrants, and are not permanent residents. Bird species known to regularly utilize the action area are considered fairly common and widespread. Training activities under the Proposed Action may eliminate visitation by certain bird species or reduce the amount of time they spend in the action area. However, displacement of these species during training exercises would not be considered substantial. Biannual vegetation trimming within MV-22 landing sites at LZs would be conducted in accordance with the CMs listed in Section 2.5, and would not involve complete removal of vegetation, thereby reducing potential impacts to wildlife nesting, roosting, and cover sites.

There could be an increased likelihood of bird-aircraft strikes across a broader geographic area, as use of designated training support areas would entail more dispersed training. However, there would be no change in the types of training that occur at the CMAGR and there would be no increase in the quantity of sorties flown, no increase in the amount and/or types of ordnance expended, no increase in artillery training tempo, and no change to existing facilities or airspace under the Proposed Action. Therefore, there is no expected measurable change in bird-aircraft strikes across the CMAGR.

Use of aircraft, particularly low-level flights and landings/takeoffs can cause noise and visual disturbance to wildlife. Impacts to wildlife from aircraft noise and visual stressors can include: a startle reflex that induces running or flight, increased expenditure of energy, decreased time and energy spent on life functions such as feeding and mating, increased likelihood of predation, and interruption of breeding or nursing behavior (Larkin 1996; Efroymson et al. 2000). Effects related to rotorwash and noise from aircraft would diminish with distance from the source, and exposure to elevated noise levels would generally be localized around landings, takeoffs, and low-level hovering but diminish with distance. As training activities already occur at the CMAGR, there would be no change in training tempo or number of sorties flown, and with implementation of CMs (Section 2.5), impacts to wildlife at the CMAGR under the Proposed Action would be less than significant.

#### Barry M. Goldwater Range-West

Impacts to wildlife at the BMGR-West under the Proposed Action would be similar in nature to those described above for the CMAGR, but would be less impactful for the following reasons: (1) there would be no grading or ground maintenance; (2) there would be no landing of aircraft in the proposed DZs; and (3) the proposed LZs at the BMGR-West occur in and in the vicinity of the Yodaville Urban Training Complex, where there is a high level of training disturbance and surrounding vegetation is sparse, providing little habitat for wildlife. Therefore, impacts to wildlife at the BMGR-West under the Proposed Action would be less than significant.

#### Special Status Species

# Chocolate Mountain Aerial Gunnery Range

As previously discussed, potential impacts to the desert tortoise, including the species' critical habitat, were fully analyzed in the Biological Assessment that was prepared in support of the Proposed Action (see Appendix A). The USMC is consulting with the USFWS under section 7 of the Endangered Species Act. Potential impacts to the desert tortoise from the Proposed Action at the CMAGR would include incidental injury or death due to training activities from military vehicles (during both establishment of the training support areas and operations), MV-22 landings, and ordnance use; loss of habitat from grading and/or training activities; noise and dust impacts from training operations; and alteration of habitat over time.

However, implementation of the CMs listed in Section 2.5 would reduce potential impacts to the desert tortoise.

Other special status plant and wildlife species at the CMAGR (Table 3.3-1) may be impacted by the Proposed Action. However, no special status species have populations that are restricted to the CMAGR action area or adjacent lands. There are no known special status plant species populations in the action area. Potential impacts from grading, maintenance, and training activities to individual special status plants and wildlife would be identical to those described above for plant communities and wildlife. Special status wildlife species would be able to transit the proposed training support areas at the CMAGR post-grading/maintenance and normal life behaviors would not be impacted. In addition, training activities at the proposed training support areas would only occur minimally throughout the year and would largely be left unimpacted. Implementation of the CMs listed in Section 2.5 would reduce potential impacts to all species at the CMAGR. Therefore, there would be no significant impact to special status species at the CMAGR under the Proposed Action.

#### Barry M. Goldwater Range-West

No federally listed species and no rare plant species would be impacted under the Proposed Action at the BMGR-West. Other special status wildlife species at the BMGR-West (Table 3.3-2) may be impacted by the Proposed Action. However, no special status species have populations that are restricted to the BMGR-West action area or adjacent lands. Potential impacts from training activities to individual special status wildlife would be identical to those described above for wildlife. Training activities at the proposed training support areas would only occur minimally throughout the year and would largely be left unimpacted. Therefore, there would be no significant impact to special status species at the BMGR-West under the Proposed Action.

# 3.3.3.2 No-Action Alternative

Under the No-Action Alternative, the proposed LZs, ALZ, DZs, and AFA within the BSTRC would not be established and current training operations within the CMAGR and BMGR-West would persist. Existing conditions would remain as described in Section 3.3.2. Therefore, no impacts to biological resources would occur under the No-Action Alternative.

# 3.4 CULTURAL RESOURCES \_\_\_\_

# **3.4.1 Definition of Resource**

Cultural resources is an inclusive label used to encompass any historic properties or resources of traditional knowledge valued by traditional communities (most often associated with Tribal Nations). Cultural resources are finite, nonrenewable resources, whose salient characteristics are easily diminished by physical disturbance; certain types of cultural resources also may be negatively affected by visual, auditory, and atmospheric intrusions.

Historic properties are defined in the federal regulations outlining Section 106 of the National Historic Preservation Act (NHPA), as amended (54 USC 306108 *et seq.*), 36 CFR § 800, as prehistoric and historical sites, buildings, structures, districts, or objects listed or eligible for listing in the National Register of Historic Places (NRHP), as well as artifacts, records, and remains related to such properties. Compliance with Section 106 of the NHPA, which directs federal agencies to consider the effect of a federal undertaking on a historic property, is outlined in the Advisory Council on Historic Preservation's regulations, *Protection of Historic Properties* (36 CFR § 800). A resource of traditional knowledge can be defined generally as one

that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

To be eligible for the NRHP, a property must possess integrity of location, design, setting, workmanship, feeling, and association, and meet the following criteria for evaluation in at least one area of significance as defined by the *Secretary of the Interior's Standards for Evaluation* (36 CFR § 60):

(a) associated with events that have made a significant contribution to the broad patterns of American history; or

(b) associated with the lives of persons significant in our past; or

(c) embody the distinctive characteristic of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant or distinguishable entity whose components may lack individual distinction; or

(d) have yielded, or may likely yield, information important in prehistory or history.

In addition to significance, a cultural resource must also retain integrity, which is the ability to convey said significance. The NRHP criteria recognize seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. A resource must retain several, if not all of these aspects, to be considered eligible for listing in the NRHP. For archaeological resources, eligibility is generally determined under Criterion D for the ability to provide important information in prehistory and/or history. The assessment of integrity for archaeological properties depends on the data requirements of an applicable research design. This includes the identification of appropriate physical remains in an intact depositional (horizontal or vertical) context. Once a federal agency has determined a cultural resource to be significant, the agency has a responsibility to manage the resource as a historic property.

While there are multiple laws, regulations, and EOs that govern the identification and management of cultural resources at MCAS Yuma, the main regulatory drivers are Section 110 and 106 of the NHPA of 1966 [54 USC 300101 et seq.] and associated regulations [36 CFR § 800]. Section 110 of NHPA requires all federal agencies to identify historic properties on their landholdings while Section 106 of NHPA requires all federal agencies to consider the effects of their undertakings on historic properties and seek to avoid, minimize, or mitigate adverse effects to these properties (36 CFR § 800.1(a)). Section 106 also requires agencies to consult with federally recognized Tribal Nations and other stakeholders with a vested interest in the undertaking. MCAS Yuma coordinates with federally recognized Tribal Nations on a recurring basis.

# **3.4.2** Affected Environment

The affected environment for cultural resources is based on the establishment of the area of potential effect (APE) of an undertaking, through consultation with the State Historic Preservation Offices. An APE is defined in 36 CFR § 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist." The APE, and therefore the affected environment, for the Proposed Action includes 3,236.3 acres, which is the total acreage to establish five LZs, an ALZ, and an AFA at the CMAGR; and two DZs and nine LZs at the BMGR-West within the BSTRC (see Table 2-1 and Figures 2-2a, 2-2b, and 2-3).

3.4.2.1 Prehistoric and Historical Setting

The CMAGR and the BMGR-West are located within the Sonoran Desert ecoregion. The CMAGR is located in the Colorado Desert, a subregion of the Sonoran Desert. This area has not been well studied,

which has resulted in a very limited understanding of the culture history of the area. The same challenges are found when studying the history of the BMGR-West. The BMGR-West is located within the western Papagueria, another a subregion of the Sonoran Desert. This term was first used by Spanish explorers to describe those occupying southwestern Arizona and northern Sonora, Mexico. The people of this region had a diverse material culture matched by shifts in ceramic, architectural, and burial styles. However, because those in this region did not live-in permanent settlements and therefore obtained few possessions, studying the population and its changing culture is challenging.

This cultural context for the BSTRC is drawn from the BMGR and CMAGR Integrated Cultural Resources Management Plans (MCAS Yuma 2019 and MCAS Yuma 2011, respectively). The plans document the procedures and processes through which MCAS Yuma fulfills its commitment to compliance with applicable laws, regulations, and policies, in the spirit of faithful stewardship of cultural resources.

#### Prehistoric Setting

The earliest, well-documented prehistoric sites in the region are identified as belonging to the San Dieguito complex/tradition that dates to approximately 8000 to 9000 BC. Small, mobile bands of hunters and gatherers with a hunting economy focused on highly ranked resources such as large mammals. Resources assigned to this complex may include cleared circles in desert pavement, rock alignments, and heavily varnished stone tools. Lithic technologies from the period are large projectile points similar to Pinto and Elko points (MCAS Yuma 2017).

Cultural resources from the Early Holocene Period (8000 to 7000 BC) have also been assigned to the San Dieguito complex. The early San Dieguito is defined by cleared circles in desert pavement, rock alignments, and heavily varnished aceramic stone tool assemblages. Similarly, the subsistence patterns in the Early Holocene also seem to be based on small mobile bands exploiting small and large game as well as seasonally available floral resources (MCAS Yuma 2017). The San Dieguito complex has been subdivided into three phases, each with additional and more sophisticated tools. Suggested artifact associations for the San Dieguito I and II phases are bifacial and unifacial scrapers and choppers as well as bilaterally notched pebbles. The San Dieguito II phase is the proposed advent of finely made blades and bifacial points as well as a large assortment of choppers and scrapers. In the San Dieguito III phase, the use of pressure flaking is the primary marker through pressure-flaked blades, leaf-shaped projectile points, plano-convex scrapers, crescentics, and elongated bifacial knives (MCAS Yuma 2017).

A continuance of mobile and limited occupation/transient sites may persist in the early and middle part of the Middle Holocene. Early Late Holocene period sites with rock-lined cache pits, multiple hearths, projectile points, and milling stones suggest a use of strategic food storage and resource caching by mobile groups. The presence of more intensive occupation in the sites examined during this period suggests that a limited number of base camps allowed mobile hunter/gatherers to exploit optimal areas more intensively during this period (MCAS Yuma 2017).

The start of the Late Holocene period (after approximately A.D. 500) (associated with the Patayan period on the lower Colorado River) roughly correlates with the introduction of pottery production (using the paddle-and-anvil technique) and floodplain agriculture on the Colorado River. The emphasis on subsistence practices appears to have been on a broad-spectrum seasonal round timed in accordance with the availability of different resources throughout the region (MCAS Yuma 2017).

The ceramic ware associated with the region is Lower Colorado Buff Ware. It was made from local clays and materials found in the Colorado River from the southern tip of Nevada to the Gulf of California. Lower

Colorado Buff Ware often found along trails, and it is thought that certain types marked trails of different time periods (Waters 1982; MCAS Yuma 2017).

A variety of well-developed trail systems throughout the Western Papagueria and the Colorado Desert corroborate the case for long-range travel to specialized resource collection areas and ceremonial locales. Several important prehistoric travel corridors have been noted in or adjacent to the CMAGR (Schaefer and Dalope 2011; MCAS Yuma 2017).

#### Historical Native American Groups

The CMAGR and BMGR-West are in close proximity to the traditional boundaries of the Yuman (Quechan), Kamia (Diegueño, Tipai, Kumeyaay), and the Cahuilla. The groups were present in their traditional territories from the prehistoric period, through the protohistoric, and into the historical period. Their early occupation of these areas is poorly documented, but a wealth of information from the historical period provides a suggestion of lifeways that may cautiously be used to infer patterns that persisted from the late prehistoric period (MCAS Yuma 2017).

#### Euro-American History

Though Euro-American expeditions along the Colorado River began earlier, the first expedition to pass near the Yuma area was that of Francisco Garcés and Juan Bautista de Anza in the late 1770s as they attempted to find a route from the Colorado River to the Pacific Ocean. Spanish missionization efforts were likewise concentrated in the Yuman groups along the Colorado River (Schaefer and Dalope 2011; MCAS Yuma 2017).

Spanish-Quechan interactions increased after the visits of Garcés and Anza. In 1780, two Franciscan missions, La Purísima Concepción and San Pedro y San Pablo, with associated lay communities, were established in Quechan territory (Schaefer and Dalope 2011; MCAS Yuma 2017).

Most of the later Euro-American presence in the Chocolate Mountains was transient and fleeting. The Chocolate Mountains were not viewed as an ideal location for agriculture due to the much richer lands to the south and west and the presence of water in these areas. Settlers from the U.S. confronted the Yumans for the first time with the advent of the Gold Rush after 1849. Prospecting and placer mining took place in the Chocolate Mountains, the most productive of these activities being the Mary Lode gold mine on the southwest face of the Chocolate Mountains. With the gold rush strikes along the Colorado River and western Arizona during the late 1850s, Yuma became a transportation hub and then later the location for the territorial prison (Schaefer and Dalope 2011; MCAS Yuma 2017).

Agriculture and tourism provided an economic boom during the early and mid-20th century. Due to its isolated location in southwestern Arizona and ideal flying climate, the federal government acquired 1.1 million acres at what is now BMGR to create a training range for air-to-air and air-to-ground combat (U.S. Air Force and USMC 2018). In June 1941, Luke Field was established, and training began. During World War II, the acreage expanded to 2.1 million acres and was divided into eastern and western components, designated the Gila Bend Gunnery Range and the Yuma Aerial Gunnery and Bombing Range. The Gila Bend Gunnery Range was renamed several times following World War II and in 1986 was redesignated as the Barry M. Goldwater Range (U.S. Air Force and USMC 2018).

MCAS Yuma was originally a municipal flying field (Fly Field), but the facility was taken over by the military during World War II and has been used as an important training base ever since. It was first established as the Yuma Army Air Base in 1942 for the development of an advanced flying school. The CMAGR was first used as the Desert Training Center in 1942 and has remained in military use since that

time. After the war, the base was left inactive until it was reactivated in 1951 as an Air Force Weapons Training Center; it was declared a permanent installation in 1954. The base was transferred to the Department of the Navy in 1959 and was used for USMC and Navy training. The installation's name and status changed to Marine Corps Air Station in 1962 (MCAS Yuma 2017).

#### 3.4.2.2 Cultural Resources Within the Affected Environment

Through a combination of cultural resource studies carried out to comply with Sections 106 and 110 of the NHPA, the entire APE has been subjected to intensive cultural resources pedestrian surveys and the State Historic Preservation Offices have concurred that the APE was adequately delineated per 36 CFR Part 800.4(a)(1). These studies include large-scale survey efforts conducted between 1977 and 2021 (CMAGR: von Werlhof and von Werlhof 1977, Pigniolo et al. 2000, Deis and Apple 2002, Shalom 2007, Schaefer et al. 2009, Austerman et al. 2010, Knighton-Wisor et al. 2016, Miljour et al. 2019, and Brann et al. 2021; BMGR-West: Doelle 1982, Dosh 2008, ASM Affiliates 2008, James 2013, Hauer et al. 2016, and Brann et al. 2021) and include all the areas of the APE.

#### Resources of Traditional Knowledge

As part of this EA, MCAS Yuma is consulting with federally recognized Tribal Nations who assert ancestral ties to the CMAGR and BMGR-West region to identify resources of traditional knowledge in the APE (Appendix A). The APE does not contain any identified resources of traditional knowledge.

#### Historical Buildings and Structures

No historical buildings or structures are located in or immediately adjacent to the APE.

#### Archaeological Resources

Cultural resources surveys previously conducted and including the 2021 survey (Brann et al. 2021) resulted in the identification and recording of six archaeological sites within the boundaries of the APE in both the CMAGR and the BMGR-West. These sites date to the historical period and include trash scatters, mining exploration, habitation, a road, and a military camp.

Of the previously recorded archaeological sites within the APE, two sites (a historical military camp and historical road) were considered unevaluated for listing in the NRHP, and one site (historical mining site) is not eligible for listing in the NRHP with Arizona State Historic Preservation Office concurrence. During the recent survey (Brann et al. 2021), three newly recorded historical sites and one previously recorded historical site that was revisited were recommended not eligible for listing in the NRHP. MCAS Yuma is currently consulting with the Arizona and California State Historic Preservation Offices regarding their eligibility determinations.

# 3.4.3 Environmental Consequences

The regulations implementing Section 106 of the NHPA require that federal agencies consider the effects (impacts) of their undertakings (proposed actions) on historic properties (cultural resources). Impacts on cultural resources are considered significant if a historic property, as defined in 36 CFR 60.4, would be physically damaged or altered, would be isolated from the context considered significant, or would be affected by project elements that would be out of character with the significant property or its setting.

Analysis of potential impacts on cultural resources considers both direct and indirect impacts. Direct impacts may occur by: (1) physically altering, damaging, or destroying all or part of a resource; (2) altering characteristics of the surrounding environment that contribute to resource significance; (3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or (4)

neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the type and location of the Proposed Action and by determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects that are farther removed from the immediate project area including visual, audible (noise), or atmospheric changes due to the project implementation.

#### 3.4.3.1 Proposed Action

#### Resources of Traditional Knowledge

No resources of traditional knowledge have been identified within the APE. Government-to-government consultation between the USMC and each federally recognized Tribal Nation associated with the BSTRC was conducted for this action in recognition of their status as sovereign nations, to provide information regarding Tribal Nation concerns per Section 106 of the NHPA, as well as information on resources of traditional knowledge that may be present near the APE (Appendix A).

#### Historical Buildings and Structures

No historical buildings or structures are located in or immediately adjacent to the APE. Therefore, there would be no impacts to historical buildings or structures.

#### Archaeological Resources

Based on the results of the previous and recent pedestrian archaeological surveys conducted within the APE, no NRHP eligible/listed archaeological sites are present. Should potential subsurface archaeological deposits be detected in the course of grading or operations, all work in the discovery area would cease. The contractor would contact MCAS Yuma Range Management Division and would refrain from working in the discovery area until the MCAS Yuma Cultural Resources Manager provides input regarding the significance of the detected item(s) and instructions.

Aircraft landings on the unevaluated historical road would not affect the integrity of this feature. Therefore, no avoidance and/or mitigation measures are needed. The Proposed Action would have no impact on archaeological resources. MCAS Yuma is currently consulting with the Arizona and California State Historic Preservation Offices regarding concurrence with a finding of no historic properties affected pursuant to 36 CFR800.4(d)(1).

#### 3.4.3.2 No-Action Alternative

Under the No-Action Alternative, the proposed LZs, ALZ, DZs, and AFA within the BSTRC would not be established, and current training operations within the CMAGR and BMGR-West would continue. Existing conditions would remain as described in Section 3.4.2. Therefore, no impacts to cultural resources would occur under the No-Action Alternative.

# 3.5 GEOLOGICAL RESOURCES

# **3.5.1 Definition of Resource**

Geological resources are generally defined as the geology, topography, soils, and geologic hazards of a given area. The geology of an area includes surface and bedrock materials, its orientation and faulting, and may contain valuable geologic resources such as mineral deposits, petroleum reserves, and fossils. Topography is the elevation, slope, aspect, and surface features found within a given area. Long-term geological, seismic, erosional, and depositional processes influence the topographic relief of an area. Soil

refers to unconsolidated earthen materials overlaying bedrock or other parent material. Geologic hazards include the seismicity (the relative frequency of earthquakes), and existence or potential for landslides, sinkholes, and liquefaction in a given area. The area considered for geologic resources includes the project area, as described in Section 2.2, and the vicinity surrounding the project area. Existing geological conditions at the CMAGR and BMGR-West are described in the paragraphs below.

# 3.5.2 Affected Environment

# 3.5.2.1 CMAGR

The CMAGR is generally bound on the west by the Salton Sea Basin and on the east by the Chuckwalla and Palo Verde mountains. The CMAGR is located in the Colorado Desert and Salton Sea geomorphic provinces of California, which are situated in the southwestern portion of the Basin and Range physiographic province. This province is characterized by generally steep, subparallel, discontinuous mountain ranges that trend northwest to southeast, separated by broad, gently sloping to nearly flat, deep alluvial basins (MCAS Yuma 2015). The CMAGR is characterized by the rugged Chocolate Mountains, a range that rises abruptly from broad alluvium-filled desert basins. These mountains are largely tilted fault blocks comprised of the Southern California batholith and Orocopia Schist of Mesozoic age (about 65 to 250 million years ago), overlain by thrust fragments of an older Precambrian metamorphic complex, with minor Tertiary (about 3 to 65 million years ago) volcanic and intrusive rocks. Pliocene (about 3 to 5 million years ago) and Pleistocene (about 2 to 3 million years ago) older alluvium occur within the adjacent basins to the east and west (MCAS Yuma 2015).

Late Pliocene, Pleistocene, and Holocene alluvial deposits overlie most of the older formations in the Chocolate Mountains and form dissected piedmont slopes around the CMAGR. These alluvial fan and terrace deposits have been informally designated as older, intermediate, and younger alluvium, based on their stratigraphic relationships (MCAS Yuma 2015). The proposed training support areas at the CMAGR lie on surficial soils overlying on-site alluvium consisting of the Rillito-Gunsight series, which is characterized by very deep, sandy and rocky loams prone to high to extremely high-water erosion and high to very high wind erosion, as shown on Figures 3.5-1 and 3.5-2 (Natural Resources Conservation Service 2011; Navy 2013).

Past and present actions such as ground range reconfigurations and associated training in the CMAGR (MCAS Yuma 2015; USMC 2016) have used a dust abatement palliative during ground-disturbing activities.

# 3.5.2.2 BMGR-West

Topography within the BMGR-West is dominated by narrow mountain ranges and broad, low-gradient alluvial valleys, including the Gila Mountains, Tinajas Mountains, Mohawk Mountains, and Mohawk Valley (U.S. Army 2017). The mountain ranges are formed from igneous, metamorphic, and sedimentary rock types. The alluvial valleys are deep bedrock basins filled with silt, clay, sand, and gravel deposits. These deposits can be more than 10,000 feet deep. Along many of the mountain bases, sloping masses of alluvial fill material, known as bajadas, extend outward like fans to taper more gradually than the mountains themselves into the generally flat valley floors (BMGR 2018). The proposed training support areas at the BMGR-West lie within alluvial basins that contain sand and loamy sand that tend to dominate the broad alluvial valleys and low-gradient slopes (BMGR 2018, U.S. Army 2017, Arizona Bureau of Mines 1960).

Establishment and Use of Training Support Areas in the BS



Figure 3.5-1. Geologic Features in the Vicinity of the Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range



Establishment and Use of Training Support Areas in the BSTRC





Figure 3.5-2. Geologic Features in the Vicinity of the Proposed Training Support Areas at the Chocolate Mountain Aerial Gunnery Range

Installation and Range Boundaries Proposed Train	ning Support Areas 0.25-Mile Buffe	Geologic Features (Basement Rock and Surface Deposits)		
Chocolate Mountain Aerial Gunnery Range Martille	ry Firing Area Burt 2.0 —— Existing Dirt Roa	d Alluvium		
Access	s Road			
Comba	at Trail			
Assaul	It Landing Zone Bull		Ň	
			4	۱.
		Sources:	Esri 2018, MCAS Yuma 2020, Navy 2017, USGS 2005	

# **3.5.3** Environmental Consequences

This section presents an analysis of potential impacts to geology and soils that could result from implementation of the Proposed Action as a result of project-related activities (e.g., earth disturbing activities), and evaluates the degree of potential impact in terms of short-term (associated with the grading phase of project implementation) and long-term effects.

#### 3.5.3.1 Proposed Action

#### LZs and DZs

Under the Proposed Action, all LZs and DZs would largely remain in their natural states and no maintenance or improvements would be required. No new roads or earth-moving activities would be required for establishment or use of the LZs and DZs. LZs would have biannual vegetation maintenance that would be done by hand tools without the need to uproot any vegetation and would not disturb soil stability. Therefore, there would be no impacts to geological resources from the establishment of LZs or DZs at the CMAGR and the BMGR-West.

Training activities that would be conducted in the designated LZs and DZ would generate surface soil disturbance and a potential increase in erosion. However, such impacts would be localized and temporary and training activities in the proposed training support areas would be consistent with on-going training at the BSTRC. In addition, LZs would not be scheduled for dust abatement, but a dust palliative, as described in Section 2.2, could be applied for dust suppression should it be deemed necessary prior to a training exercise. The application of water-permeable dust palliative would not generate additional runoff to adjacent areas that may lead to an increase in erosion. Therefore, operations within the LZs and DZs would have no significant impact on geological resources.

#### ALZ Bull and AFA Burt 2.0

Establishment of ALZ Bull would require grading/earthwork, to include surficial grading and leveling, to create an expeditionary landing strip. Though surface soils would be disturbed for the creation of the landing strip, the overall impact to topography would be minimal as the topography of the proposed ALZ Bull footprint is relatively flat.

AFA Burt 2.0 would require the use of an existing unmaintained dirt road that stems off of Midway Well Road for access by ground training vehicles and equipment, and the establishment of a combat trail to the AFA (see Figure 2-2b). Both would be unimproved, graded dirt roads that would require initial and occasional grading to maintain the accessibility of the roads and to allow maneuverability of vehicles and equipment. Although surface soils would be disturbed, the overall impact to topography would be minimal as the topography in the vicinity of AFA Burt 2.0 is relatively flat.

Use of AFA Burt 2.0 would not entail any major earthwork beyond on-ground troops digging pits to help absorb the recoil of the artillery and would be temporary, as described in Section 2.2. Following training activities, any pits that were dug would be filled and returned to pre-activity contours.

Training activities that would be conducted at ALZ Bull would generate surface soil disturbance and a potential increase in erosion. However, such impacts would be localized and temporary. To minimize the potential for impacts, following the initial grading, the landing strip for ALZ Bull would receive applications of a dust palliative, as described in Section 2.2, on an as needed basis, to provide erosion control and dust suppression. Therefore, operations within ALZ Bull and AFA Burt 2.0 would have no significant impact on geological resources.

#### 3.5.3.2 No-Action Alternative

Under the No-Action Alternative, the proposed LZs, ALZ, DZs, and AFA within the BSTRC would not be established, and current training operations at the CMAGR and the BMGR-West would persist. Existing conditions would remain as described in Section 3.5.2. Therefore, no impacts to geological resources would occur under the No-Action Alternative.

This page intentionally left blank.

# CHAPTER 4 OTHER NEPA CONSIDERATIONS

# 4.1 POSSIBLE CONFLICTS BETWEEN THE PROPOSED ACTION AND THE OBJECTIVES OF FEDERAL, STATE, LOCAL, AND REGIONAL LAND USE PLANS, POLICIES, AND CONTROLS\_\_\_\_\_\_

Implementation of the Proposed Action would comply with all applicable federal, state, and local statutes and regulations (refer to Section 1.6, *Regulatory Setting*), as well as all applicable federal, state, regional, and local policies and programs.

# 4.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF ALTERNATIVES INCLUDING THE PROPOSED ACTION AND ALL MITIGATION MEASURES BEING CONSIDERED\_\_\_\_\_\_

As discussed in Section 2.4, the Proposed Action reflects the culmination of an iterative process that successively reduced impacts to resources without sacrificing operational training needs. The resulting project also reflects features that represent the minimum amount of resources and associated energy to implement the Proposed Action. Furthermore, reducing the level of future maintenance (and thus energy needed) for the Proposed Action was factored into the project design. The resulting training support areas identified under the Proposed Action would have no direct energy requirements. The Proposed Action would comply with the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007.

# 4.3 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF NATURAL OR FINITE RESOURCES\_\_\_\_\_

Resources that are irreversibly or irretrievably committed to a project are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal and fuel, and other natural or cultural resources. These resources are "irretrievable" when used for one project when another action could have used them for another purpose. Human labor is also 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, grading and maintenance activities would require the use of vehicles that would result in the consumption of additional limited amounts of fuel, oil, and lubricants. Due to the anticipated limited use of these resources, their use would not constitute a significant irreversible or irretrievable commitment of resources.

# 4.4 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 designate a parcel of land or other resource to a certain use often eliminates the possibility of other uses at that site.

The Proposed Action would result in short-term effects primarily related to grading and maintenance activities involving the use of vehicles and equipment used for other purposes. 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 welfare of the public.

# 4.5 MEANS TO MITIGATE AND/OR MONITOR ADVERSE ENVIRONMENTAL IMPACTS \_

The CMs presented in Section 2.5 would be incorporated into the project design and implementation to reduce potential adverse environmental impacts.

# CHAPTER 5 REFERENCES

Arizona Bureau of Mines. 1960. Geologic Map of Yuma County. Available at: http://repository.azgs.az.gov/sites/default/files/dlio/files/nid1628/yumacounty\_1960\_geologicmap.pdf . Accessed on 05 April 2021.

- Arizona Department of Environmental Quality. 2021. https://www.azdeq.gov/node/229. Accessed on 08 April 2021.
- ASM Affiliates. 2008. A Cultural Resource Survey for the Proposed Murrayville Range Complex, Barry M. Goldwater Range-West, Arizona.
- Austerman, Gini, Kevin Hunt, and John Dietler. 2010. Archaeological Surveys for Nineteen Proposed MV-22 Osprey Landing Areas; Chocolate Mountain Aerial Gunnery Range, Imperial County, California.

BMGR. 2018. BMGR Integrated Natural Resources Management Plan. August.

- Brann, Steven, Isla Nelson, and Katie Briscoe. 2021. Draft Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California. Prepared for Naval Facilities Engineering Systems Command Southwest by Cardno GS, Inc. 30 April.
- California Air Pollution Officers Association 2021. California Emissions Estimator Model (CalEEMod). Available at: http://www.capcoa.org/caleemod/.
- California Department of Fish and Wildlife. 2021. Special Animals List. April 2021. State of California Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database.
- California Native Plant Society. 2021. Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org. Accessed on 03 May 2021.
- California Air Resources Board. 2019a. California Ambient Air Quality Standards. http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm. Accessed on 05 March 2021.
- California Air Resources Board. 2021b. Area Designation Maps, State and National. Accessed at https://ww3.arb.ca.gov/desig/adm/adm.htm. Accessed on 05 March 2021.
- CEQ. 2019. Draft National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions. 84 FR 30097. 26 June
- Deis, Richard, and Rebecca Apple. 2002. Cultural Resources Survey of Six Areas of the Chocolate Mountain Aerial Gunnery Range, Imperial County, California.
- Doelle, William. 1982. An Archaeological Survey of the Yuma TACTS Range Project Area, Luke Air Force Range, Arizona.
- Dosh, Steven. 2008. Cultural Resources Survey Along 173 Miles of Roadway Near Wellton Hills, Barry M. Goldwater Range West, Marine Corps Air Station, Yuma County, Arizona.

- Efroymson, R.A., W.H. Rose, S. Nemeth, and G.W. Suter II. 2000. Ecological Risk Assessment Framework for Low-Altitude Overflights by Fixed-Wing and Rotary-Wing Military Aircraft. Research sponsored by the Strategic Environmental Research and Development Program of the U.S. Department of Defense. Publication No. 5010, Environmental Sciences Division.
- Hauer, A. Craig, Sean McMurray, and Sarah Branch. 2016. An Archaeological Survey of 6,289 Acres on the Barry M. Goldwater Range West, Yuma County, Arizona. Prepared by ASM Affiliates.
- ICAPCD. 2012. Rule 800, General Requirements for Control of Fine Particulate Matter (Pm-10) (Adopted 10/10/94; Revised 11/25/96; Revised 11/08/2005; Revised 10/16/2012). Available at: https://apcd.imperialcounty.org/wp-content/uploads/2020/05/1RULE800.pdf.
- ICAPCD. 2021. ICAPCD Rules and Regulations. https://apcd.imperialcounty.org/rules-and-regulations/. Accessed on 08 April 2021.
- Imperial Irrigation District. 2018. Salton Sea Hydrology Development. October. https://www.iid.com/home/showdocument?id=17297. Accessed on 12 May 2021.
- Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.
- James, Karla. 2013. Letter Report for an Archaeological Survey of Approximately One Acre for a Tower on Barry M. Goldwater Range West, Marine Corps Air Station, Yuma.
- Knighton-Wisor, Jonathan, Mark Sutton, Mitchell Keur, Jason Windingstad, and Robert Wegener. 2016. Archaeological Survey of 1,210 Acres on the Chocolate Mountain Aerial Gunnery Range, California, for Marine Corps Air Station Yuma, Arizona. Technical Report 16-14. Prepared by Statistical Research, Tucson.
- Larkin, R.P. 1996. Effects of military noise on wildlife: a literature review. Illinois Natural History Survey, Center for Wildlife Ecology.
- Marine Corps Installations West. 2009. Final Environmental Impact Statement for the West Coast Home Basing of the MV-22. November.
- MCAS Yuma. 2011. Integrated Cultural Resources Management Plan for the Chocolate Mountain Aerial Gunnery Range, California. Draft.
- MCAS Yuma. 2013. Range and Training Areas Standard Operating Procedures (StaO 3710.6J). 30 January.
- MCAS Yuma. 2015. Environmental Assessment for Target Complex Invader Chocolate Mountain Aerial Gunnery Range. April.
- MCAS Yuma. 2017. Integrated Natural Resources Management Plan for the Chocolate Mountain Aerial Gunnery Range, California. February.
- MCAS Yuma. 2019. Barry M. Goldwater Range Integrated Cultural Resources Management Plan Part III: Cultural Resources Management on The Barry M. Goldwater Range West. July.
- Miljour, Heather, John Vyhmeister, Jonathan Knighton-Wisor, Mark Sutton, Jason Windingstad, and Robert Wegener. 2019. Archaeological Survey of 5,821 Acres on the Chocolate Mountain Aerial Gunnery Range, California, for Marine Corps Air Station Yuma, Arizona.
- NAVFAC Southwest. 2021. Desert Tortoise Survey Report In Support of Environmental Assessment for Cactus West MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, Marine Corps Air Station Yuma, Arizona.

Navy. 2013. Final Legislative EIS for the Renewal of the CMAGR Land Withdrawal. April.

- Natural Resources Conservation Service. 2011. State Soil Geographic (STATSGO2) Database. Available at: https://databasin.org/datasets/1ff4328039f948529c33e7e71bb9b5fc/. Accessed on 16 April 2021.
- Ouren, D.S., C. Haas, C.P. Melcher, S.C Stewart, P.D. Ponds, N.R. Sexton, L. Burris, T. Fancher, and Z.H. Bowen. 2007. Environmental Effects of Off-Highway Vehicles on BLM Lands: A Literature Synthesis, Annotated Bibliographies, Extensive Bibliographies, and Internet Resources. U.S. Geological Survey Open-File Report 2007-1353.
- Pigniolo, Andrew, John Dietler, Michael Baksh, Stephanie Murray, Sara Frazier, and Matt Murray. 2000. Cultural Resources Survey Report for the Niland to Blythe Powerline Replacement Project, Imperial County and Riverside County.
- Schaefer, Jerry and Michelle Dalope. 2011. Draft Results of a Class III Cultural Resources Survey of 6,933 Acres in SWAT 4, Chocolate Mountain Aerial Gunnery Range, Imperial County, California.Prepared for NAVFAC Southwest. Prepared by ASM Affiliates. May.
- Schaefer, Jerry, Arleen Garcia-Herbst, and Sherri Andrews. 2009. Archaeological Survey of Access Roads in the Chocolate Mountain Aerial Gunnery Range (CMAGR), Imperial County, California
- Shalom, Diane. 2007. Archaeological Survey for the Chocolate Mountain Aerial Gunnery Range Central Training Area, Marine Corps Air Station Yuma.
- Soilworks. 2015. Gorilla-Snot Material Safety Data Sheet. Revised 7 January 2015. Downloaded from http://www.soilworks.com/products-and-services/gorilla-snot.aspx on 24 April 2021.
- Upekala C.W., S.J. Scoles-Sciulla, and L.A. Defalco. 2009. Dust Deposition Effects on Growth and Physiology of the Endangered *Astragalus jaegerianus* (Fabaceae). Madroño 56:81-88.
- U.S. Air Force and USMC. 2018. Barry M. Goldwater Range Integrated Natural Resources Management Plan Update. August.
- U.S. Army. 2017. Environmental Assessment Extended Range Cannon Artillery Project. January. Available at: https://www.spl.usace.army.mil/Portals/17/docs/publicnotices/erca\_ea\_fonsi.pdf?ver=2017-01-26-230258-190.
- USEPA. 2021a. National Ambient Air Quality Standards Table. https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed on 05 April 2021.
- USEPA. 2021b. The Green Book Nonattainment Areas for Criteria Pollutants. As of 31 March 2021. https://www.epa.gov/green-book. Accessed on 05 March 2021.
- USFWS. 1996. Biological Opinion for the Military Use of the CMAGR, CA (1-6-96-F-40). 18 April.
- USFWS. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). Region 8, Pacific Southwest Region, Sacramento, CA.
- USFWS. 2015. Proposed Special Warfare Training Areas 4 and 5 Amended Biological Opinion for Military Use of the CMAGR (FWS-IMP-15B0239-16F0039). 19 November.
- USMC. 1997. Yuma Training Range Complex. Final EIS. January.
- USMC. 2013. EA for the Tactical Employment of MV-22 Osprey Tiltrotor Aircraft in Support of Marine Corps Training & Readiness Operations. MCB Camp Pendleton, CA. April.
- USMC. 2016. Environmental Assessment for Proposed Range Redesign of Special Warfare Training Areas 4 and 5, CMAGR, Imperial and Riverside Counties, CA. March.

- von Werlhof, Jay, and Sherilee von Werlhof. 1977. Archaeological Examinations of Certain Portions of Chocolate Mountains.
- Waters, M. 1982. The Lowland Patayan Ceramic Tradition. In Hohokam and Patayan: Prehistory of Southwestern Arizona, edited by Randall H. McGuire and Michael B. Schiffer, 275–297. Academic Press, New York.
# CHAPTER 6 LIST OF PREPARERS

Cardno and subcontractor staff prepared this EA under the direction of NAVFAC Southwest. Members of the project team include the following MCAS Yuma, NAVFAC Southwest, and contractor staff:

#### MCAS Yuma

John Gordon Range Plans Officer

Randy English Conservation Manager

Bill Sellars Director, Range Management

Karla James

Archaeologist/Cultural Resources Manager

Bobby Law Biologist/Natural Resources Section

Sergio Obregón NEPA Planning Manager

Jo'El I. Santa Teresa Command Counsel

Jonathan Gholson GIS Manager

#### NAVFAC Southwest

```
Jesse Martinez
Senior NEPA Planner/Project Manager, NAVFAC Southwest Environmental Core
```

#### <u>Cardno</u>

Stella Acuña, Solana Beach, CA Project Director, 29 years' experience

Steve Brann, New Cumberland, PA Archaeologist, 19 years' experience

Jackie Clark, Solana Beach, CA Technical Editing, Graphic Design, and Document Production, 10 years' experience

Stephanie Clarke, Solana Beach, CA Geographic Information System Specialist, 5 years' experience

Leah Gonzales, Santa Barbara, CA Environmental Analyst, 4 years' experience Caitlin Jafolla, Solana Beach, CA Environmental Analyst, 8 years' experience

Patrick Kester, Solana Beach, CA Air Space/Air Traffic and Noise Specialist, 15 years' experience

Isla Nelson, Boise, ID Cultural Resources Specialist, 19 years' experience

Geoff Olander, Hampton, VA Air Space/Air Traffic and Noise Specialist, 28 years' experience

Clint Scheuerman, Santa Barbara, CA Project Manager and Senior Biologist, 17 years' experience

Richard Stolpe, Solana Beach, CA Environmental Scientist, 22 years' experience

Lisa Woeber, Denver, CO Technical Reviewer, 23 years' experience

Scout Environmental

Ryan Pingree, Encinitas, CA Resources Eliminated from Detailed Analysis, Quality Control Review, 23 years' experience This page intentionally left blank.

From:	Law CIV Robert P			
To:	Jenness McBride			
Cc:	James, Vincent P			
Subject:	CMAGR MV-22 Formal Consultation			
Date:	Wednesday, June 23, 2021 12:47:00 PM			
Attachments:	MV-22 USFWS Consultation Letter BL signed.pdf			
	Final BA MV-22 LZ"s BL.pdf			
	Final MV-22 Desert Tortoise Survey Report BL odf			

Ms. McBride

MCASY request to initiate formal consultation with USFWS on the attached project. Attachments include a request letter, final BA, and DT survey report. I have been working with Mr. James, and he is familiar with the project. I look forward to working with USFWS on this consultation. If you have any questions or concerns please let me know.

Thanks,

Bobby Law Biologist/Natural Resources Section Range Management Dept/MCAS P.O. Box 99134/Bldg 151 Yuma, Arizona 85369-9134 robert.p.law@usmc.mil <mailto:robert.p.law@usmc.mil> 928-269-6724

### FINAL

## BIOLOGICAL ASSESSMENT FOR CACTUS WEST MV-22 LANDING ZONES, ASSAULT LANDING ZONES, AND DROP ZONES MARINE CORPS AIR STATION, YUMA



Department of the Navy Naval Facilities Engineering Systems Command Southwest 937 North Harbor Drive San Diego, CA 92132-5190





**JUNE 2021** 

## TABLE OF CONTENTS

Section			Page
ACRONYMS	AND AB	BREVIATIONS	iii
EXECUTIVE	SUMMA	RY	iv
CHAPTER 1 I	NTRODI	JCTION	1
1.1	Purpose	and Need	1
1.2	Project	Background	2
1.3	Listed S	Species Potentially Affected	2
CHAPTER 2 F	PROPOSE	ED ACTION	5
2.1	Descrip	tion of the Proposed Action	5
2.2	Measure	es Proposed To Avoid, Minimize, and Compensate for Effects To Listed	
	Species	and/or Critical Habitat	9
CHAPTER 3 E	EXISTING	G CONDITIONS, INCLUDING FEDERALLY LISTED SPECIES, AND	
DESCRIPTIO	N OF TH	E SPECIFIC AREA AFFECTED BY THE ACTION	15
3.1	Descrip	tion of the Proposed Action Area	15
	3.1.1	Site Description	15
	3.1.2	Desert Tortoise	16
CHAPTER 4 A	ANALYS	IS OF EFFECTS AND DESCRIPTION OF THE MANNER IN WHICH	
THE ACTION	MAY A	FFECT LISTED SPECIES	25
4.1	Descrip	tion of Proposed Action consequences	25
	4.1.1	Desert Tortoise	
	4.1.2	Desert Tortoise Critical Habitat	30
	4.1.3	Cumulative Effects	33
CHAPTER 5 C	CONCLU	SION	34
CHAPTER 6 F	REFEREN	VCES	35

APPENDIX A. Desert Tortoise Survey Report

#### LIST OF FIGURES

#### <u>Figure</u>

1	Overview Map	
2	Proposed Action Training Support Areas	7
3	Salvation Northern Multi-Ship Training Support Area	
4	Salvation Single Ship North 1 and 2 Training Support Areas	
5	Salvation Southern Multi-Ship Training Support Area	
6	AFA Burt 2.0 Training Support Area	
7	Bull Training Support Area	
8	Pina Training Support Area	

#### LIST OF TABLES

#### <u>Table</u>

## Page

Page

ES-1	Summary of Findings for the Desert Tortoise and Desert Tortoise Critical Habitat	v
1	Proposed Action Training Support Areas	6
2	Desert Tortoise Training Support Area Survey Results	18
3	Proposed Training Support Area Acreages of Permanent and Temporary Effects	28
4	Proposed Training Support Areas under the Proposed Action within Critical	
	Habitat	31
5	Effects Determination	34

## ACRONYMS AND ABBREVIATIONS

Definition			
artillery firing area			
assault landing zone			
Biological Assessment			
Barry M. Goldwater Range-West			
biological opinion			
Bob Stump Training Range Complex			
Code of Federal Regulations			
Chocolate Mountain Aerial Gunnery Range			
drop zone			
Explosives Ordnance Disposal			
Endangered Species Act			
Field Contact Representative			
kilometer			
landing zone			
Marine Aircraft Wing			
Marine Aviation Weapons and Tactics Squadron One			
Marine Corps Air Station Yuma			
mean carapace length			
millimeter(s)			
Department of the Navy			
Station Order			
Tactical Training Procedure			
United States			
U.S. Fish and Wildlife Service			
U.S. Geological Survey			
United States Marine Corps			
Vegetation Classification and Mapping Program			
Weapons and Tactics Instructor			

## **EXECUTIVE SUMMARY**

The United States Marine Corps (USMC) has prepared this Biological Assessment (BA) in accordance with Section 7(a)(2) of the Endangered Species Act and as required by 50 Code of Federal Regulations 402.14(c) to facilitate consultation between the USMC and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects to Mojave desert tortoise (*Gopherus agassizii*) from the Proposed Action.

Under the Proposed Action, the USMC proposes to establish and use landing zones (LZs), an assault landing zone (ALZ), drop zones (DZs), and an artillery firing area (AFA) at the two tactical ranges within the Bob Stump Training Range Complex (BSTRC): the Chocolate Mountain Aerial Gunnery Range (CMAGR), California and the Barry M. Goldwater Range-West, Arizona. The USMC does not propose to increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC under the Proposed Action. This BA only analyzes the portion of the Proposed Action that occurs on the CMAGR, for which new DZs are not proposed. The Proposed Action does not include any new construction or permanent landscape alteration but includes the establishment of seven proposed training support areas: five LZs, one ALZ, and one AFA. This requires grading, blading, vegetation trimming for aircraft safety purposes, and the application of a liquid copolymer dust palliative, which may be applied to the LZs for dust suppression to provide a safe landing environment.

In support of this BA, focused desert tortoise surveys were conducted in March 2021 within the seven proposed training support areas at the CMAGR, totaling 1,410.6 acres. Live desert tortoise, their sign (i.e., scat, carcasses, eggshell fragments, etc.), or potential burrows were found in the majority of the proposed training support areas and, therefore, all areas within the Proposed Action are considered occupied by desert tortoise. All proposed training support areas are located within the Colorado Desert Recovery Unit of the desert tortoise, and several on the east side of the Chocolate Mountains are located within federally designated critical habitat for the desert tortoise.

To avoid, minimize, and compensate for potential consequences of the Proposed Action, multiple measures detailed in previous biological opinions (BOs) (1-6-95-F-40 [USFWS 1996]; FWS-IMP-15B0239-16F-0039 [USFWS 2015]); and the *Integrated Natural Resources Management Plan for the Chocolate Mountains Aerial Gunnery Range, California* (MCASY 2017) would be implemented.

In summary, this BA concludes the Proposed Action may affect and is likely to adversely affect the desert tortoise and desert tortoise critical habitat (see Table ES-1).

Species or Habitat	Effects Determination
Desert Tortoise	May affect and is likely to adversely affect.
Desert Tortoise Critical Habitat	May affect and is likely to adversely affect.

## Table ES-1. Summary of Findings for the Desert Tortoise and Desert Tortoise Critical Habitat

This page intentionally left blank.

## CHAPTER 1 INTRODUCTION

This Biological Assessment (BA) provides the information necessary to support consultation between the United States Marine Corps (USMC) and the U.S. Fish and Wildlife Service (USFWS), as required by 50 Code of Federal Regulations (C.F.R.) 402.14(c) and Section 7 of the federal Endangered Species Act (ESA) of 1973, as amended. The USMC proposes to establish and use landing zones (LZs), an assault landing zone (ALZ), drop zones (DZs), and an artillery firing area (AFA) at the two tactical ranges within the Bob Stump Training Range Complex (BSTRC): the Chocolate Mountain Aerial Gunnery Range (CMAGR) and the Barry M. Goldwater Range-West (BMGR-West). Expansion of training support areas in the BSTRC is essential to accomplishing critical Marine Corps and Naval Tactical Training Procedures (TTPs), Training and Readiness Codes, and Large Force Exercises.

Marine Corps Air Station Yuma (MCASY) manages the BSTRC, which consists of Department of Defense-controlled airspace and Department of the Navy (DON)/USMC-controlled training ranges, including the CMAGR in southeastern California and the BMGR-West in southwestern Arizona. The CMAGR, lying on a southeast-northwest axis, is located in north-central Imperial County and south-central Riverside County, California (Figure 1). The CMAGR is generally bound on the west by the Salton Sea Basin and on the east by the Chuckwalla and Palo Verde mountains.

For the purposes of this BA, only those portions of the Proposed Action that would occur within the CMAGR are analyzed. The DZs, which are proposed only on the BMGR-West, are not located within the range of the desert tortoise and are not discussed within this BA. Within the CMAGR, the Proposed Action includes the establishment and use of seven proposed training support areas (five LZs, one ALZ, and one AFA), which comprise the Proposed Action discussed herein.

#### 1.1 PURPOSE AND NEED

The purpose of the Proposed Action is to expand mission-critical training capabilities within the CMAGR for Marine Corps and Naval aviators and Marine Air-Ground Task Force artillery cannoneers (ground troops who fire artillery). The Proposed Action is needed to provide MV-22 aircraft similar flexibility to existing legacy rotary-wing aircraft, and to provide a safer and more realistic artillery firing training environment within the CMAGR. The Proposed Action is also needed to accomplish critical Marine Corps and Naval TTPs, Training and Readiness Codes, and Large Force Exercises. More specifically, the Proposed Action would address ongoing training challenges at the CMAGR, which include the following:

• Tilt-rotor aircraft (i.e., the MV-22) lack the same training flexibility as legacy rotary-wing aircraft at the CMAGR. Tilt-rotor aircraft landings outside of designated areas at the CMAGR are strictly prohibited, unlike rotary-wing aircraft, which can land in a variety of locations (MCASY 2013). However, it is critical that MV-22 aircraft have similar flexibility to legacy rotary-wing assault support aircraft in order to conduct air-to-ground embark of troops in LZs during training evolutions in support of Assault Support Tactics and Training and Readiness Certifications.

- ALZs are designated LZs that allow for landing and takeoff of fixed-wing, rotary-wing, and tiltrotor aircraft in geographic locations that contain expeditionary or hasty landing fields that expose aircrews to maximum-effort takeoffs/landings within a rigorous setting. The Assault Support training community has critical and emergent requirements to train on unimproved surfaces for combat readiness and for expeditionary operations. Currently, there are no ALZs within the CMAGR.
- AFAs are on-ground areas established to support ground combat artillery (i.e., large-caliber guns, howitzers, and mortars) firing activities. Currently, the primary AFA at the CMAGR used during Weapons and Tactics Instructor (WTI) courses is too close to the target impact areas, which does not allow for a realistic artillery employment scenario. In addition, the proximity to the impact area limits the targets that are able to be engaged safely when traversing the gun-target line with rotary-wing aircraft due to the maximum ordnance of the round. A new AFA at the CMAGR, established farther from the target impact areas, would extend the artillery range and associated training envelope, which would subsequently increase the separation from the aircraft and the flight path of the round when crossing the gun-target line.

#### **1.2 PROJECT BACKGROUND**

The CMAGR is the premier national live-fire training range essential for developing and maintaining the readiness of Marine Corps and DON aviators. The range is also vital for training select Marine Corps and DON land combat forces. The CMAGR currently supports training by units of the DON, U.S. Air Force, U.S. Army, U.S. Reserve Components, and U.S. National Guard; however, the Marine Corps, and in particular, the 3<sup>rd</sup> Marine Aircraft Wing (MAW) is the primary user of the CMAGR. Local command for military operation and administration of the CMAGR, which is approximately 459,000 acres in size, has been delegated by the Secretary of the DON to the Commanding Officer, MCASY, Arizona (DON 2013).

Ground combat training also occurs at the CMAGR. The use of the range for ground warfare training dates from 1966 and is oriented towards individual fighting skills and unit tactics. Ground warfare, to include the use of artillery, typically involves battalion-sized or smaller units. The USMC routinely deploys small units, up to battalion in size, to MCASY for ground training; twice annually, the USMC sends an infantry battalion to MCASY to support the WTI Course. The CMAGR also has an extensive network of ground ranges for training in small arms, artillery, and explosives.

#### **1.3 LISTED SPECIES POTENTIALLY AFFECTED**

This BA provides the best available scientific data for the federally threatened Mojave desert tortoise (*Gopherus agassizii*; hereafter desert tortoise), which is the only federally listed species known to occur at the CMAGR (MCASY 2017). Additionally, 642.1 acres of federally designated critical habitat for the desert tortoise within the Chuckwalla Critical Habitat Unit occur within the Proposed Action Area.



#### AECOM

Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 1 OVERVIEW MAP

This page intentionally left blank.

Final Biological Assessment for Cactus West MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

## CHAPTER 2 PROPOSED ACTION

#### 2.1 DESCRIPTION OF THE PROPOSED ACTION

Under the Proposed Action, the USMC would establish seven proposed training support areas at the CMAGR: five LZs, one ALZ, and one AFA. Establishment of these areas would not require any paving, permanent structures, or new utilities; however, grading, blading, and soil contouring would be required to establish and maintain several of the proposed training support areas. Table 1 details the proposed training support areas at the CMAGR, and they are depicted on Figure 2. The proposed training support areas, specific to the Proposed Action, include:

- LZs are areas that would allow for landing and takeoff of MV-22 aircraft in realistic combat scenarios in the Range and Training Areas consistent with Legacy Rotary-Wing Aircraft Policy and Procedures. Marine Corps Assault Support Tactics require the ability and flexibility to land aircraft while conducting evolutions within a single objective area. MV-22 aircraft require the ability to tactically ingress and egress. LZs established for use by MV-22 aircraft would largely remain in their natural states and no new roads would be established for use of the LZs. However, to reduce the threats to aircraft and aircrews posed by large, woody vegetation, minor trimming of woody vegetation may occur biannually within the immediate vicinity of MV-22 landing sites within the LZs. Because aircrews would intentionally land in areas devoid or nearly devoid of vegetation, it is expected that the need for biannual vegetation trimming would be minimal. No plants would be intentionally uprooted or removed and trimming would be done with hand tools. In addition, LZs would not be scheduled for dust abatement. However, if deemed necessary prior to training operations due to high potential for unsafe dust conditions for aircrews, an eco-safe, biodegradable, liquid copolymer dust palliative (e.g., brand name "Envirotac II") may be applied to the LZs for dust suppression.
- ALZs facilitate the landing and takeoff of fixed-wing, rotary-wing, and tilt-rotor aircraft in geographic locations that contain expeditionary or hasty landing fields that expose aircrews to maximum-effort takeoffs/landings within a rigorous setting. The Assault Support training community has critical and emergent requirements to train on unimproved surfaces for combat readiness and for expeditionary operations. Although ALZs do not require the establishment of support facilities or structures, occasional maintenance grading would be required to maintain the expeditionary landing strip within the ALZ. In addition, following initial grading, the landing strip would receive an application of an eco-safe, biodegradable, liquid copolymer dust palliative (as previously discussed for LZs). The landing strip would receive reapplications of the dust palliative as needed. The dust palliative is used to provide erosion control and dust suppression. No new roads would be established for use of the ALZ.
- AFAs are areas established to allow ground support troops to set up artillery (i.e., large-caliber guns, howitzers, and mortars) for firing into previously established target areas. The establishment of the AFA would not entail any major earthwork beyond on-ground troops digging pits to help absorb the recoil of the artillery. Following training activities, any pits that were dug would be filled and returned to pre-activity contours. AFA Burt 2.0 would require the use of the existing Midway Well Road for access by ground training vehicles and equipment, and

the establishment of a new combat road/trail to the AFA. The new combat road/trail would be an unimproved graded dirt road. Both roads would require occasional grading to maintain the accessibility of the roads and to allow maneuverability of vehicles and equipment.

Training Support Area Type	Training Support Area Name	Acres
	Pina	68.3
Landing Zone	Salvation Northern Multi-Ship	487.0
	Salvation Southern Multi-Ship	738.0
	Salvation Single Ship North 1	8.8
	Salvation Single Ship North 2	8.8
Assault Landing Zone	Bull	12.9
	AFA Burt 2.0	42.0
Artillery Firing Area	Access Road (via existing Midway Well Road)	33.4
	New Combat Road/Trail	11.4
	Total	1,410.6

#### **Table 1. Proposed Action Training Support Areas**



#### AECOM Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 2 PROPOSED ACTION TRAINING SUPPORT AREAS

This page intentionally left blank.

Final Biological Assessment for Cactus West MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

Under the Proposed Action, no new paved roads or permanent buildings/structures would be established; however, initial and occasional maintenance grading would occur for the creation and continued use of the ALZ and the access roads to AFA Burt 2.0. Operations under the Proposed Action would generally be consistent with ongoing operations in the CMAGR. The USMC would not increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the CMAGR.

Operations within the new training support areas would be scheduled and deconflicted with other range users. Once established, the additional training support areas would add to the available locations for MV-22 aircraft operations. Likewise, the addition of an ALZ would add to the overall available training locations for all MAWTS-1/WTI purposes. All proposed training support areas would be utilized in a natural or near-natural setting, except for minor, as-needed vegetation trimming and occasional grading maintenance required to maintain the accessibility of the access roads to AFA Burt 2.0 and to maintain the expeditionary landing strip at ALZ Bull.

#### 2.2 MEASURES PROPOSED TO AVOID, MINIMIZE, AND COMPENSATE FOR EFFECTS TO LISTED SPECIES AND/OR CRITICAL HABITAT

The Proposed Action would be conducted in accordance with the conservation measures presented below. The following measures are proposed to avoid, minimize, and compensate for potential effects to desert tortoise within the Proposed Action Area. These measures are based upon review of potential Proposed Action effects and the incorporation of applicable terms and conditions from previous consultations with the USFWS addressing similar actions and the desert tortoise, including the Biological Opinion (BO) for the Military Use of the CMAGR, California (1-6-96-F-40) (USFWS 1996), and the Proposed Special Warfare Training Areas 4 and 5 Amended BO for Military Use of the CMAGR (FWS-IMP-15B0239-16F0039; USFWS 2015). These measures have been reviewed to ensure compliance with the *Integrated Natural Resources Management Plan for the Chocolate Mountains Aerial Gunnery Range, California* (MCASY 2017; hereafter 2017 CMAGR INRMP). The measures outlined in this BA are intended to reduce the potential for death or injury to individual tortoises, reduce or minimize negative effects on tortoise habitat, and monitor population trends.

Many of the measures below are specific to construction activities. While the Proposed Action would not construct any physical structures, ground-disturbing activities would occur through grading/blading an access road and new combat road/trail to AFA Burt 2.0 and during creation of ALZ Bull. Therefore, many of the below measures have been slightly modified to replace the term "construction" with "ground-disturbing activities," which are specific to the Proposed Action. The measures that would be incorporated into the Proposed Action include:

1) The MCASY Tortoise Management Representative within the Range Management Department would ensure compliance with protective stipulations by all users. This representative has the authority to halt activities that may be in violation of such provisions. The Tortoise Management Representative also would coordinate with the designated USFWS representative on all matters concerning desert tortoise mitigation and management responsibilities. The Tortoise Management Representative does not have to be a qualified desert tortoise biologist and therefore would receive instructions from a qualified desert tortoise biologist in the handling, data collection, and release procedures for desert tortoise prior to engaging in such

activities. MCASY would submit the name(s) and credentials of the person(s) that would be the Tortoise Management Representative or appointee(s) (see Measure 5 for additional information). Only qualified desert tortoise biologists, the Tortoise Management Representative, or appointees ("appointee" is defined as a person having the same qualifications as the Tortoise Management Representative) would handle desert tortoises.

- All personnel accessing the CMAGR would participate in MCASY's existing tortoise education program, which has been developed cooperatively with the USFWS. The program would include, at a minimum, the following topics: (1) occurrence of the desert tortoise; (2) sensitivity of the species to human activities; (3) legal protection for desert tortoises; (4) penalties for violations of federal law; (5) general tortoise ecology and activity patterns; (6) reporting requirements; (7) measures to protect tortoises; (8) personal measures that users can take to promote the conservation of desert tortoises; and (9) procedures and a point of contact if a desert tortoise is observed on the site.
- 3) All personnel accessing the CMAGR would be informed of their responsibility to report any form of take to the Tortoise Management Representative. If a tortoise is found in the proposed training support areas, activities may, if appropriate, be modified to avoid injuring or harming it and MCASY Tortoise Management Representative shall be contacted immediately.
- 4) Range Management personnel would be responsible for periodically reminding all personnel of the protective measures for tortoises.
- 5) Desert Tortoise Handling Procedures
  - a. Only biologists authorized by the USFWS shall handle desert tortoises, except in circumstances in which the life of the desert tortoise is in immediate danger (see item 5d, below). For biologists not already authorized, MCASY shall submit their credentials to the USFWS for review and approval at least 30 days before the initiation of any activity within desert tortoise habitat.
  - b. Desert tortoises shall be moved only by an authorized biologist and solely for the purpose of moving the animals out of harm's way. Desert tortoises shall be moved the minimum distance to ensure their safety.
  - c. All handling of tortoises and their eggs and excavation of burrows are to be conducted by an authorized biologist in accordance with up-to-date protocols accessed at the USFWS website (http://www.fws.gov/ventura/endangered/species/surveys-protocol.html).
  - d. If an emergency situation exists, and a tortoise must be moved out of immediate danger, the animal may be moved to an adjacent shaded area (normally plant cover) out of direct sunlight. Desert tortoises shall only be moved the minimum distance to ensure their safety. Range Management shall be notified.
- 6) An annual monitoring report would be prepared and delivered to the USFWS on or before 15 January of each year. The report would briefly outline the effectiveness of the desert tortoise mitigation measures and summarize desert tortoise injuries or mortalities. To enhance desert tortoise protection, the report would make recommendations for modifying or refining existing measures.

- 7) The Proposed Action Area would be included in the rotation of areas that are currently surveyed during ongoing annual surveys at the CMAGR (as funds are available). Surveys are conducted using the USFWS-recommended methods by qualified desert tortoise biologists. Surveys are conducted within existing safety protocols and mission parameters at the designated area(s) within the CMAGR during regularly scheduled range closures in the spring and all data are collected and entered into the MCASY Geographic Information System database. The results of monitoring are included in the annual monitoring report prepared by MCASY and delivered to the USFWS on or before 15 January of each year. Any changes in survey methodology would be reported to the USFWS in an annual monitoring report.
- 8) In accordance with the existing BO for the CMAGR (1-6-95-F-40; USFWS 1996), the boundaries of ground-disturbing activities would be determined in the field, mapped, and marked with monuments prior to ground-disturbing activities. Ground-disturbing activities would be placed outside of and away from surface drainages, where feasible. All ground-disturbing activities would be within the designated boundaries. Clearance surveys conforming to USFWS recommendations would be followed for the initial siting of all ground-disturbing activities. A qualified desert tortoise biologist or the Tortoise Management Representative would also be on-site during initial ground-disturbing activities.
- 9) An authorized desert tortoise biologist would be "on-call"/available during ground-disturbing activities to address the situation if a desert tortoise is encountered. The MCASY Range Management Department would provide the USFWS the name(s) and qualifications of the biologist(s) for review and approval.
- 10) Any excavations associated with ground-disturbing activities that would be left open in areas that are not being monitored shall either be fenced temporarily to exclude desert tortoises, covered at the close of each work day, or provided with ramps so desert tortoises can escape. All excavations shall be inspected for desert tortoises before filling.
- 11) All personnel conducting service road construction, construction/training activities, and operational range clearance (e.g., Explosives Ordnance Disposal [EOD] personnel) would monitor "take" as part of their sweeps of activity areas. Personnel would report to the Tortoise Management Representative any injured or dead tortoises located, as well as habitat damage outside of the designated activity area. Personnel would fill out a form after ground-disturbing/training activities and EOD clearance activities, reporting any take. The Tortoise Management Representative (or appointee) would be present during all ground-disturbing activities and EOD clearance activities and available to respond to individual EOD and range maintenance crews (who would be trained per Measures 2 and 3) in the event the crews observe tortoise mortality/take, habitat damage, or need to have a tortoise relocated.
- 12) The project proponent would designate a Field Contact Representative (FCR) once ground clearing is completed and the desert tortoise fences are installed. The FCR would be responsible for overseeing compliance with biological resources conservation measures, and any other required terms and conditions resulting from consultation between the USMC and USFWS. The FCR would be on-site during all construction activities. The FCR would have a copy of all avoidance and minimization measures during construction activities. The FCR may be a crew chief, field supervisor, project manager, or a contracted biologist. The FCR would have the authority to halt construction, operation, or maintenance activities that are in violation

of these requirements. A representative from MCASY Range Management Department would make bi-weekly visits to ensure compliance.

- 13) Roads would conform to the natural contour of the land as much as possible to minimize grading, and would avoid existing perennial plants as much as possible.
- 14) Vehicles traveling along access roads, or any road within critical habitat, shall not exceed 20 miles (32 kilometers [km]) per hour. All roads entering critical habitat would be posted with speed limits of 20 miles (32 km) per hour. To the extent practicable, vehicles would remain on established roads except as required for specific training activities. To reduce potential effects, vehicles used during specified training activities would stay within the confines of road boundaries until the destination is reached.
- 15) After ground-disturbing activities are completed, operations would be directed by the 1996 BO (USFWS 1996), and/or the anticipated amendment to the 1996 BO, or new and subsequent BOs tiered to the original, including the BO that would be issued as a result of this BA, with the exception that off-road driving (which is prohibited by the 1996 BO) would be allowed.
- 16) All personnel operating vehicles within tortoise habitat on the CMAGR would inspect underneath their parked vehicle before moving it. If a desert tortoise is found beneath a vehicle, the Tortoise Management Representative or qualified appointee(s) would be contacted and the vehicle would not be moved until the Tortoise Management Representative removes it from harm's way or the tortoise leaves on its own accord.
- 17) No pets would be permitted at any time within the Proposed Action Area. Military working dogs are permitted, but only under the control of their handler.
- 18) All ground personnel that enter the Proposed Action Area would be required to remove all food stuffs, trash, or other waste that may attract common ravens (*Corvus corax*; hereafter raven) and other desert tortoise predators, in accordance with existing regulations for the CMAGR. Any temporary trash receptacles would be equipped with latching/locking lids. The Tortoise Management Representative would be responsible for ensuring that trash is removed regularly from the Proposed Action Area and that the trash containers are kept securely closed when not in use. MCASY would employ the following measures to further discourage raven settlement:
  - a. Abandoned vehicles found on the CMAGR would be inventoried and steps would be taken to remove them.
  - b. Public use is restricted and would continue to be restricted in the CMAGR, thus reducing the raven attraction towards people.
  - c. Cattle grazing and cattle watering troughs are restricted on the range and would remain as such for security and raven prevention.
  - d. Range signs and fencing would be limited to a minimum to reduce the number of elevated perches.
  - e. Training operations and personnel would be required to properly dispose of food and trash per Station Order (StaO) 3710.63.
  - f. Ground-disturbing activities would have appropriate trash receptacles per StaO 3710.63.

- g. Personnel such as range wardens, range inspectors, and troops using the training areas would be educated and instructed to report any raven sightings, which would be investigated and documented by MCASY biologists.
- h. Any raven or raven nests discovered on the CMAGR would be evaluated by MCASY biologists for tortoise predation. In addition, when any raven-damaged tortoise shells are found, the surrounding area would be searched for raven and raven nests. Upon completion of any necessary environmental review, and in accordance with appropriate permitting, any predatory ravens and their nests would be removed using methods similar to those identified in the March 2008 "Reduce Common Raven Predation on the Desert Tortoise" USFWS Environmental Assessment upon completion of any necessary environmental review and in accordance with appropriate permitting.
- i. Periodically, all wildlife guzzlers would be inspected by biologists, range inspectors, and range wardens for raven usage. Observations of tortoise carcasses and raven nests near guzzlers would result in further evaluation for removal.
- 19) The Tortoise Management Representative or appointee(s) would survey all ground support areas for dead or injured tortoises after the completion of each ground operation.
- 20) Should a dead or injured tortoise be located on-site during or after any military activity, the MCASY Range Management Department would be notified immediately. The USFWS would be notified by the Tortoise Management Representative via email within three working days of the discovery of any tortoise death or injury caused by military activity. Notification would include the date, time, circumstances, and location of any injury or death. Dead animals would be buried to avoid attraction of scavengers. Injured animals would be taken to a veterinarian approved by the USFWS. Information to be provided to the USFWS would include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and any other pertinent information.

21) In an effort to control the spread of invasive (non-native) weeds, all construction-type equipment and/or construction-type vehicles originating outside of the CMAGR shall be power-washed before entering roadways on the way to the CMAGR. While washing wheeled vehicles, the front wheels shall be turned lock-to-lock to allow for exposure of surfaces that may hold soil or weed seeds.

## CHAPTER 3 EXISTING CONDITIONS, INCLUDING FEDERALLY LISTED SPECIES, AND DESCRIPTION OF THE SPECIFIC AREA AFFECTED BY THE ACTION

#### 3.1 DESCRIPTION OF THE PROPOSED ACTION AREA

The Proposed Action Area includes the footprints of the seven proposed training support areas detailed previously in Chapter 2.1, which total 1,410.6 acres. As previously detailed, the USMC does not propose to increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the CMAGR under the Proposed Action. Rather, the Proposed Action is specific to the creation/establishment and use of the proposed training support areas.

#### 3.1.1 <u>Site Description</u>

The Proposed Action Area is located within the southwestern portion of the Colorado Desert Recovery Unit for the desert tortoise and is north and east of the eastern edge of the Salton Sea. The Proposed Action Area is classified as having a low to high potential for the desert tortoise based on the U.S. Geological Survey (USGS) desert tortoise habitat potential model (Nussear et al. 2009). Habitat along the gradually west-sloped side of the Chocolate Mountains is predicted to be lower quality for the desert tortoise compared with higher quality habitat near the base of, within, and east of the Chocolate Mountains. Multiple surveys over the past several decades confirm this is the case as detailed in the 2017 CMAGR INRMP (MCASY 2017).

Regionally, the Proposed Action Area is situated within the Colorado Desert on sloped, open terrain dominated by desert scrub vegetation interspersed with small ephemeral drainages and washes. Federally designated critical habitat for the desert tortoise within the Chuckwalla Critical Habitat Unit is located on the east side of the CMAGR and overlaps with portions of the Proposed Action that occur to the east of the Chocolate Mountains. The Chuckwalla Critical Habitat Unit encompasses 1,020,600 acres, of which 187,842 acres occur in the CMAGR. Approximately 40 percent of the CMAGR occurs within designated desert tortoise critical habitat. Approximately 642.1 acres of the 1,410.6-acre Proposed Action Area (or 45.5 percent) occur within critical habitat. While not all of the proposed training support areas are located within designated critical habitat, they all contain the physical and biological features of desert tortoise critical habitat as described in *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2019). These include:

- sufficient space to support viable populations within each of the recovery units and to provide for movement, dispersal, and gene flow;
- sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;
- suitable substrates for burrowing, nesting, and overwintering;
- burrows, caliche caves, and other shelter sites;

- sufficient vegetation for shelter from temperature extremes and predators; and
- habitat protected from disturbance and human-caused mortality.

The Proposed Action Area contains three main natural communities based on the mapping (VegCAMP et al. 2013) in the 2017 CMAGR INRMP (MCASY 2017). The Proposed Action Area on the west side of the Chocolate Mountains is predominantly Madrean Warm Semi-Desert Wash Woodland/Scrub interspersed with Lower Bajada and Fan Mojavean-Sonoran Desert Scrub. The Proposed Action Area within and on the east side of the Chocolate Mountains includes sections of North American Warm Desert Bedrock Cliff and Outcrop along with Lower Bajada and Fan Mojavean-Sonoran Desert Scrub.

#### 3.1.2 <u>Desert Tortoise</u>

The desert tortoise is the only federally listed species known to occur on the CMAGR, and the Proposed Action Area occurs within habitat known to be occupied by desert tortoise (MCASY 2017). Focused desert tortoise surveys were conducted in March 2021 to determine the presence/absence of desert tortoise within the Proposed Action Area. Details of those surveys are provided in Appendix A and summarized below.

#### **Desert Tortoise Surveys**

#### Methodology

Desert tortoise surveys were conducted in accordance with the most recent guidance from the USFWS detailed in *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise* (*Gopherus agassizii*) (USFWS 2019). The surveys employed 100-percent visual coverage of the seven proposed training support areas ("survey areas" within the desert tortoise survey report in Appendix A). Range access constraints on the CMAGR prevented surveys from occurring during the protocol survey window (April through May and September through October) and desert tortoise surveys were instead conducted in early to mid-March 2021. While surveys were conducted earlier than the USFWS 2019 protocol states, temperatures are generally warmer earlier in the season near the southern extent of the species range, including the CMAGR. Furthermore, because surveys used 100-percent coverage and desert tortoises are known to be active and above ground in March on the CMAGR (based on the 2020 *Line Distance Sampling for Desert Tortoises at Chocolate Mountains Aerial Gunnery Range*; Vernadero Group 2020), survey timing was determined as appropriate. Finally, email dialogue with Natural Resources Staff at MCASY confirmed that the March timeframe was appropriate for detecting desert tortoises on the CMAGR, as confirmed by the USFWS.

Focused 100-percent coverage desert tortoise surveys were conducted by biologists slowly walking 10-meter-wide spaced transects searching for all desert tortoise sign. All desert tortoise sign detected (shell fragments, bones, scutes, carcasses, drinking depressions, mating rings, scat, burrows, tracks, and live individuals) were recorded. A hand-held mirror or light was used to examine any potential desert tortoise burrows for occupancy. All surveys were conducted during daylight hours with no minimum temperature restrictions. However, surveys were not conducted if temperatures exceeded 35 degrees Centigrade (95 degrees Fahrenheit) in the shade when measured approximately 5 centimeters from the soil surface above the ground.

Data collected followed the guidelines in the most recent survey protocol (USFWS 2019). All desert tortoise sign had its location recorded via geographic positioning system. Data recorded included the survey date, names of all surveyors, start and end times, weather conditions, and any evidence that indicated desert tortoises were present (e.g., scat, burrows, carcasses, courtship rings, drinking depressions, etc., in addition to live tortoises). The USFWS Field Manual (USFWS 2009) was used to categorize the condition of all potential burrows detected. For every live desert tortoise found, the mean carapace length (MCL) was estimated, along with the tortoise gender, whether it had a transmitter, its general health (if its face was visible), and any additional distinguishing marks. All observed desert tortoise sign regardless of where it was detected within the proposed training support areas was recorded.

#### Results

Across all proposed training support areas, fresh/recent desert tortoise sign was relatively scarce but highly localized in the few areas where it was detected. Two adult desert tortoises were detected in the northwestern corner of Salvation Northern Multi-Ship training support area (Figure 3), with an additional adult tortoise detected outside that training support area on the west side. No desert tortoises (or recent sign) were detected within the two small Salvation Single Ship North 1 and 2 training support areas (Figure 4). Three adult desert tortoises were detected in the southern half of Salvation Southern Multi-Ship training support area (Figure 5). Three adult desert tortoises were detected within AFA Burt 2.0 training support area and associated new combat road/trail, with a fourth desert tortoise detected outside of, but walking towards a desert tortoise located within the new combat road/trail (Figure 6). No desert tortoises were detected at the Bull or Pina training support areas (Figures 7 and 8, respectively). Table 2 provides a breakdown of the number of live adult desert tortoises detected per training support area (desert tortoises observed outside of training support areas are not counted in Table 2), along with the number of burrows (and their classifications), carcasses, scat, and eggshell fragments. Regarding the number of carcasses detected, both intact whole carcasses in addition to shell fragments and scattered carcass remains are included together.

All desert tortoise sign detected (and detailed in Table 2) is displayed on training support area-specific Figures 3 through 8. Generally, there was more desert tortoise sign, including live adult desert tortoises on the north and east sides of the Chocolate Mountains, which is in line with the USGS habitat mapping and the USFWS critical habitat designation.

Finally, the USMC considered an original configuration and location for ALZ Bull which, following field reconnaissance during field surveys, was deemed to have potential environmental and logistical constraints because it would require grading in portions of several ephemeral desert washes. Therefore, the location and configuration of ALZ Bull was changed (rotated towards the north to reduce the potential for affecting ephemeral washes), as presented in this BA as Revised Bull (on Figure 7), which was not surveyed for desert tortoise. The original ALZ Bull was surveyed, but because the footprint of ALZ Bull was revised after the completion of desert tortoise surveys, focused desert tortoise surveys were not conducted throughout the entirety of Revised Bull.

Desert Tortoise Sign by Survey Location		Salvation Northern Multi-Ship	Salvation Single Ship North 1 and 2	Salvation Southern Multi-Ship	AFA Burt 2.0, Access Road, and New Combat Road/Trail	Bull	Pina	Total
Live Desert Tortoise	Adult (≥180 millimeters [mm] MCL)	2 <sup>1</sup>	0	3	31	0	0	8
	Subadult/Juvenile (<180 mm MCL)	0	0	0	0	0	0	0
	Class 1	0	0	2	1	0	0	3
	Class 2	1	0	3	0	0	0	4
Burrows	Class 3	1	0	0	0	0	0	1
	Class 4	12	1	10	0	0	6	29
	Class 5	12	1	3	2	0	7	25
Carcasses	Intact carcasses and scattered shell/bone fragments	9 adult (four female, one male, and four of unknown sex) and 1 subadult	1	5 adult (one female, one male, and three of unknown sex)	1	0	0	17
	Scat	0	0	5	1	0	0	6
Eggshell Fragments		1	0	0	0	0	0	1

Table 2. Desert Tortoise Training Support Area Survey Results

Notes:

<sup>1</sup> One adult desert tortoise was found just outside of the survey area and, therefore, is not included here.

<sup>2</sup> The following burrow class definitions were adopted from the USFWS Field Manual (USFWS 2009) and are defined as:

a. currently active, with desert tortoise or recent desert tortoise sign

b. good condition, definitely desert tortoise; no evidence of recent use

c. deteriorated condition; this includes collapsed burrows; definitely desert tortoise

d. good condition; possibly desert tortoise

e. deteriorated condition; this includes collapsed burrows; possibly desert tortoise



#### AECOM

Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# **FIGURE 3** SALVATION NORTHERN MULTI-SHIP TRAINING SUPPORT AREA



#### AECOM

Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 4 **SALVATION SINGLE SHIP NORTH 1 AND 2 TRAINING SUPPORT AREA**



## **AECOM** Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 5 SALVATION SOUTHERN MULTI-SHIP TRAINING SUPPORT AREA



#### AECOM Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

Feet

# **FIGURE 6 AFA BURT 2.0 TRAINING SUPPORT AREA**




Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 7 BULL TRAINING SUPPORT AREA



Feet

Final Desert Tortoise Biological Assessment in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# **FIGURE 8 PINA TRAINING SUPPORT AREA**

## CHAPTER 4 ANALYSIS OF EFFECTS AND DESCRIPTION OF THE MANNER IN WHICH THE ACTION MAY AFFECT LISTED SPECIES

Per updated regulations (on August 27, 2019; USFWS 2019) regarding revisions to portions of the regulations to clarify, interpret, and implement Section 7 of the ESA, this BA uses the term "consequences" to refer to the various effects of the Proposed Action. Per the revised regulations: "*Effects of the action*" are all consequences to listed species or critical habitat that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 C.F.R. Section 402.17).

This section analyzes potential consequences that may occur to desert tortoise and desert tortoise critical habitat. While potential consequences would be very similar for both desert tortoise and critical habitat, those consequences that are more specific to desert tortoise (i.e., noise, injury and/or mortality) are discussed first under the desert tortoise section, and habitat-based consequences are discussed under the critical habitat section.

### 4.1 DESCRIPTION OF PROPOSED ACTION CONSEQUENCES

Implementation of the Proposed Action is anticipated to result in a variety of consequences (also known as effects) that may be direct, indirect, permanent, and/or temporary. Direct effects are the immediate result of Proposed Action activities (e.g., direct mortality of desert tortoise or removal of vegetation and habitat by grading for access roads). Direct effects may be either temporary (reversible) or permanent (irreversible).

Indirect effects are caused by or result from Proposed Action activities but occur later in time or are spatially removed from the activities (e.g., shifts in vegetation composition or increased predation risk over time). Indirect effects are diffuse, resource specific, and less amenable to quantification or mapping than direct effects, but still need to be considered. Indirect effects typically extend beyond the immediate project footprint(s).

The term "permanent effects" is used to define effects that would result in the irreversible removal of biological resources that cause affected areas to no longer function as habitat for desert tortoise. Permanent effects may occur from grading/blading: the access road to AFA Burt 2.0, the new combat road/trail at AFA Burt 2.0, and from ALZ Bull. Furthermore, the potential for injury and/or mortality to desert tortoise through direct strikes from MV-22s or military vehicles/equipment or by crushing them in burrows would be considered a permanent effect.

The term "temporary effects" is used to discuss effects that may temporarily render habitat unusable/undesirable to desert tortoise but are considered reversible, such as minor soil-disturbing activities that do not permanently remove biological resources for desert tortoise. Temporary effects may include vegetation trimming to allow safe landing areas for MV-22s; noise; dust; vibration; and potential

for wildland fire from MV-22s, military vehicles, artillery recoil pits, and ordnance expenditure from use of the AFA.

#### 4.1.1 <u>Desert Tortoise</u>

Across the various training support areas, desert tortoise and their burrows were found in different locations that may be affected by the Proposed Action. These are briefly described below as they pertain to specific effects from the Proposed Action. The locations of desert tortoise and their burrows that were documented during March 20201 surveys are depicted on Figures 3 through 8.

At the Pina training support area, no active, recent, or definitive desert tortoise burrows (Class 1, 2, or 3 burrows) were detected. Only Class 4 and 5 burrows, which are possibly desert tortoise, were found. Therefore, use of the LZ at Pina is unlikely to result in direct crushing of burrows that support desert tortoise.

At the Salvation Northern Multi-Ship training support area, live desert tortoise and all active/recent desert tortoise burrows were located in the far-western portion of the site where small steeply eroded hills are located. The hills are not ideal locations for landing MV-22s due to their steep nature, and desert tortoise and their burrows are protected by the rocky landscape. No desert tortoise or active/recent burrows (Class 1, 2, or 3) were found in the flat areas that comprise the majority of the Salvation Northern Multi-Ship training support area.

At the Salvation Single-Ship North 1 and 2 training support areas, no desert tortoise or active/recent burrows were found, as they are located in an incised canyon wash with deep sand that does not support burrows.

At the Salvation Southern Multi-Ship training support area, three desert tortoise and several burrows were found in the southern half of the site. These burrows were located in semi-open sparsely vegetated areas in slightly elevated portions within a broad wash. These burrows have the potential to be crushed by MV-22s and military vehicles/equipment if activities are conducted near the southern half of the site.

Several desert tortoises and their burrows were found within AFA Burt 2.0 and its associated access roads. These desert tortoise and their burrows have a potential to be crushed or disturbed by road grading/blading and by training activities, including the placement of artillery.

The ALZ Bull training support area (the originally proposed location) had no desert tortoise or sign detected. However, the location of Revised Bull was not fully surveyed for desert tortoise; therefore, it is unknown if any active/recent desert tortoise burrows are present within Revised Bull.

#### **Direct Effects**

#### Permanent

Direct, permanent effects to desert tortoises may include the potential for incidental injury or death due to training activities from military vehicles (during both establishment of the training support areas and operations), MV-22 landings, and ordnance expenditure from use of the AFA. Training activities could cause injury or mortality to desert tortoises by vehicle and MV-22 tires striking desert tortoises while they

are aboveground or by crushing burrows with desert tortoise inside. During use of LZs and the ALZ, MV-22 pilots would generally choose open locations to land that have low-growing vegetation and are not in hilly/rocky terrain. Desert tortoise tend to construct burrows in locations with strong soil structural integrity such as in rocky areas or at the base of perennial vegetation. While there is a potential for burrows with desert tortoise potentially inside to be crushed or collapsed by MV-22 use of LZs and the ALZ, most burrows detected during spring 2021 surveys were in specific locations that are not suitable for landing aircraft.

Desert tortoises in training support areas could be crushed or buried as a result of road and ALZ grading/blading, digging recoil pits at AFA Burt 2.0, and other ground-disturbing activities. Measures identified in Chapter 2.2, however, would minimize the potential to directly harm desert tortoises by requiring pre-construction clearance surveys at all proposed ground-disturbing areas before commencing activities. Any desert tortoises found within ground-disturbing areas would be relocated outside of the area by a USFWS-authorized biologist.

Furthermore, all vehicles would be restricted to a speed limit of 20 miles per hour or less on access roads within desert tortoise critical habitat and would stay within the confines of road boundaries until reaching designated ranges, to reduce potential effects to desert tortoises. Speed limits would be clearly marked and all personnel would be made aware of these speed limits. Also, all parked vehicles would be inspected immediately before being moved. If a desert tortoise is found under a vehicle, the vehicle would not be moved until the desert tortoise leaves on its own accord or is safely relocated by the Tortoise Management Representative or qualified appointee. The need to handle a tortoise in this circumstance would constitute a "take" by harassment, but the effect is expected to be a temporary stress to the desert tortoise that is unlikely to result in mortality.

In summary, with the implementation of all proposed measures (see Chapter 2.2), there is low potential for desert tortoise injury and mortality. Incidental take could also occur by way of animal handling if translocation of tortoises becomes necessary during ground-disturbing activities or use of the training support areas, as such handling can induce stress as indicated by the voiding of the bladder (USMC 2011). Since desert tortoises store much of their water in their bladders, this can lead to an increase in the potential for dehydration (Jørgensen 1998). However, desert tortoises at other military installations (e.g., 29 Palms Combat Center) have been moved out of harm's way on numerous occasions. Generally, these tortoises were moved only short distances and showed no adverse effect (Henen 2010, as cited in USMC 2011).

An additional potential permanent direct effect to desert tortoise is the grading/blading of habitat within the Proposed Action Area. Table 3 provides a breakdown of detailed acreages, including critical habitat, that would be permanently and temporarily affected under the Proposed Action.

Training Support Area Type	Training Support Area Name	Permanent Effects (acres)	Temporary Effects (acres)	Acreage within Desert Tortoise Critical Habitat (acres)
	Pina	-	68.3	68.3
	Salvation Northern Multi-Ship	-	487.0	487.0
Landing Zone	Salvation Southern Multi-Ship	-	738.0	-
	Salvation Single Ship North 1	-	8.8	-
	Salvation Single Ship North 2	-	8.8	-
Assault Landing Zone	Bull	12.9	-	-
	AFA Burt 2.0	-	42.0	42.0
Artillery Firing Area	Access Road (via existing Midway Well Road)	33.4	-	33.4*
	New Combat Road/Trail	11.4	-	11.4*
	Total	57.7	1,352.9	642.1

 Table 3. Proposed Training Support Area Acreages of Permanent and Temporary Effects

Note: \*These acreages within desert tortoise critical habitat are considered permanent effects from grading/blading of access road and new combat road/trail.

Based on acreages in Table 3, 12.9 acres of desert tortoise habitat would be permanently affected by grading/blading of ALZ Bull. The original location of ALZ Bull had no desert tortoise sign detected during March 2021 surveys; the Revised Bull location was not fully surveyed but, consistent with the original location that was surveyed, is expected to have a low potential for desert tortoise. Furthermore, vehicle and aircraft use could result in the crushing, breaking, and removal of plants; a reduction of overall vegetative cover; and the erosion and/or compaction of topsoil. Surface disturbance and reduced plant cover associated with military training activities may also facilitate detection of hatchling and juvenile desert tortoises by predators such as ravens and coyotes. Additional habitat would be permanently affected at AFA Burt 2.0, but because the habitat is designated as desert tortoise critical habitat, it is discussed in the critical habitat section below.

#### Temporary

Several temporary, direct effects may occur to desert tortoise, primarily from MV-22 use of the LZs and ALZ, and to a lesser extent artillery firing from AFA Burt 2.0, which include noise and dust. Noises that are nearby, loud, sudden, and combined with a visual stimulus produce the most intense reactions in animals (Bowles et al. 1999). While the noise emanating from MV-22 and other military equipment may disturb desert tortoise, there is little potential for noise or visual stimuli to effect tortoises for the vast majority of the year for the following reasons: (1) only 5 percent of a desert tortoise's life is spent aboveground (Nagy and Medica 1986), (2) tortoises do not appear heavily affected by noise (Bowles et al. 1999), (3) the Proposed Action activities would not be continuous as they would occur sporadically throughout the year (especially during WTI that generally occurs biannually), and (4) disturbance would cease upon training event completion. These effects are also unlikely to cause mortality, and tortoises temporarily affected would be able to resume normal behaviors and to utilize areas from which they have been deterred by the activity. As such, any effect that noise associated with the proposed training activities might have on desert tortoises is expected to be minimal and would not cause stress or behavioral reactions that would rise to the level of take under the ESA.

Desert tortoises would be exposed to increased amounts of particulate matter, fugitive dust, and/or sediment generated by vehicles and aircraft. MV-22 training would result in the temporary disturbance of loose surface debris and soil caused by downdraft and outwash from moving rotors (collectively known as rotorwash) in the vicinity of take-offs, landings, and near-surface hovering, potentially resulting in a temporary direct effect to vegetation and soils. Rotorwash forces are relative to the engine power settings and the aircraft's proximity to the ground. Wind velocities could reach 90 knots (103.6 miles per hour) directly below the MV-22 when hovering at 100 feet (30.48 meters) above ground level (Marine Corps Installation West 2009 as cited in USMC 2013). As recorded from direct field observations (USMC 2013), typical effects resulting from MV-22 rotorwash range from windblown vegetation to broken branches in shrubs and trees. In extreme cases, soil can be scoured to the extent that small shrubs are uprooted or nearly uprooted. Dust cloud development from the displacement of topsoil and loose vegetation is another common effect from rotorwash. The intensity of these effects would be proportional to the amount of time the area is exposed to these high velocity winds and the amount of vegetation (or tortoises) that actually occur within a given landing area. However only 5 percent of a desert tortoise's life is spent aboveground (Nagy and Medica 1986), and desert tortoises are naturally exposed to dust and sand, both above- and belowground. By comparison, the airborne sand and dust from training events would affect relatively small areas for brief periods, during which a tortoise in the vicinity would probably retract into its shell.

Another temporary direct effect to desert tortoise (and desert tortoise habitat) would be excessive heat from MV-22s during landings and take-offs. As described in USMC 2013, heat radiating from MV-22 engines while landing, departing, or idling can cause vegetation to wilt or become desiccated, toasted, or charred. Under normal operations, however, with engine exhaust deflectors operating, the exhaust of the MV-22 should not heat the ground to a temperature high enough to support combustion of plant-based materials such as dry grasses (USMC and U.S. Forest Service 2013). This is because exhaust deflectors activate as soon as there is weight on the main landing gear wheels, thereby ensuring that the aircraft operates with the exhaust deflectors on at all times when on the ground and reducing the potential for wildfire ignition to low (Marine Corps Air Ground Combat Center 2010).

Although effects on desert tortoise habitat from the use of MV-22s would be direct, they are anticipated to be temporary as (1) they would be localized under the landing site; (2) pilots would avoid landing sites with vegetation or other vertical obstacles as much as possible; (3) the USMC anticipates that most MV-22 landing operations, such as insertions/extractions, would take a few minutes; (4) MV-22 aircrews can throttle back engine power while on the ground to substantially reduce rotorwash wind speeds and deconcentrate engine heat exhaust; and (5) exhaust deflectors would automatically be deployed when on the ground. As such, the use of MV-22s is not expected to appreciably degrade desert tortoise habitat within the Proposed Action.

### **Indirect Effects**

Indirect effects may be both permanent and/or temporary and some effects may start out as temporary and become permanent. As such, they are presented herein together. Indirect effects to desert tortoises and their habitat may include an increase in predation, an increase in dust on vegetation that desert tortoise consume, and a potential for increased spread of weedy species. An increase in desert tortoise predation may result if tortoise predators (e.g., common ravens and canids [coyotes and desert kit foxes]) are attracted to the proposed training support areas, which has a potential to increase predation on desert

tortoises, especially juveniles. With the implementation of the measures in Chapter 2.2, the attraction of potential predators to the proposed training areas would be reduced by the control and management of trash associated with training activities and military personnel.

There is a potential for increased dust from Proposed Action activities to cover desert tortoise food sources and indirectly affect the species. Particulate matter, fugitive dust, and/or sediment generated by vehicle and aircraft use can reduce the photosynthetic capacity of affected plants, potentially reducing growth and vigor (Sharifi et al. 1997; Ouren et al. 2007). However, dust can increase net photosynthesis early in the growing season (when water is more available) by increasing leaf temperature (Upekala et al. 2009). Overall, particulate matter generation associated with vehicle and aircraft use is expected to cause plant productivity to decrease in localized areas. However, as described above, windblown dust and sand regularly occur in desert environments. As such, based on the localized nature of the effects, the amount of dust over baseline levels generated by the Proposed Action would be negligible. Furthermore, the use of dust suppressants, included as part of the Proposed Action, would reduce the potential for dust to accumulate on vegetation and make it less palatable for desert tortoise.

Finally, ground disturbance associated with Proposed Action activities could increase the likelihood of non-native plant dispersal and establishment by increasing the amount of disturbed habitat for such species to occur in, which could reduce forage cover available directly by outcompeting native vegetation or indirectly by increasing the risk of fire. These effects would be reduced by the implementation of measures in Chapter 2.2 such as washing equipment brought onto the CMAGR from outside areas.

#### **Summary of Effects to Desert Tortoise**

The Proposed Action has a potential to cause direct and indirect effects that are both permanent and temporary to desert tortoise and their habitat. Establishment and use of the training support areas have the potential to cause injury and/or mortality to desert tortoise, result in the permanent and temporary loss of habitat, and result in habitat degradation through increased dust, potential to spread invasive weeds, and increased wildfire frequency. While the measures proposed in Chapter 2.2 have proven to reduce effects to desert tortoise and their habitat since the implementation of the 1996 BO and subsequent BOs, there remains a low potential for desert tortoise take from the Proposed Action. While it is difficult to quantify a level of take that may occur from the Proposed Action due to varying desert tortoise densities across the different training support areas, several desert tortoises and their burrows were detected within the proposed training support areas (namely Salvation Northern and Southern Multi-Ship sites, and AFA Burt 2.0). If desert tortoise are moved out of harm's way prior to use of these training support areas, the potential for direct injury and/or mortality is low. While the Proposed Action is not necessarily covered by an existing BO, the activities are similar to those covered by the 1996 BO (USFWS 1996) and would have no greater effect on desert tortoise than those activities already covered by the 1996 BO. The 1996 BO exempted take in the form of injury and mortality of 11 desert tortoises and capture/harassment of 112 desert tortoises annually across the CMAGR. No take has been reported in recent years (USFWS 2015) under the 1996 BO and thus the additional potential for take from the Proposed Action is not likely to adversely affect the desert tortoise.

### 4.1.2 Desert Tortoise Critical Habitat

Table 4 presents the breakdown of the permanent and temporary acreage of effects to desert tortoise critical habitat. In general, the permanent effects from grading/blading in the access road and new combat

road/trail are much smaller than the temporary effects to critical habitat from establishment and use of the LZs and ALZ.

Training Support Area Type	Training Support Area Name	Permanent Effects (acres)	Temporary Effects (acres)
Landing Zone	Pina	-	68.3
Landing Zone	Salvation Northern Multi-Ship	-	487.0
	AFA Burt 2.0	-	42.0
Artillery Firing Area	Access Road (via existing Midway Well Road)	33.4	-
	New Combat Road/Trail	11.4	-
	Total	44.8	597.3

Table 4. Proposed Training Support Areas under the Proposed Action within Critical Habitat

#### Direct

#### Permanent

Up to 44.8 acres of occupied desert tortoise critical habitat would be permanently affected from grading/blading of an access road from Midway Well Road to AFA Burt 2.0 along with a new combat road/trail that connects from the access road to the AFA. The access road and new combat road/trail would be maintained as dirt roads free of vegetation (by periodic grading/blading) and not support foraging or burrowing habitat for desert tortoise. The access roads would have a relatively narrow width (15 to 30 feet wide), would not be paved or bermed, and would generally follow a narrow existing dirt road that leads southeast from Midway Well Road to AFA Burt 2.0. Since the roads would not be bermed, desert tortoise would be able to walk across the roads without hindrance. Based on surveys in spring 2021, one desert tortoise burrow with a female desert tortoise was found within the footprint of the proposed new combat road/trail. The desert tortoise and burrow would be avoided during grading/blading of the new combat road/trail and the burrow would not need to be moved or relocated. As part of sighting in the new combat road/trail, in accordance with measures in Chapter 2.2 (measures 8 and 9), the boundaries of road grading would be determined in the field, mapped, and marked prior to grounddisturbing activities. Desert tortoise clearance surveys conforming to USFWS recommendations would be followed for the initial siting of road grading, and a qualified desert tortoise biologist or the Tortoise Management Representative would also be on-site during grading activities. An authorized desert tortoise biologist would be "on-call"/available if a desert tortoise is encountered. A qualified desert tortoise biologist or the Tortoise Management Representative would survey and stake the road grading locations to avoid direct effects to desert tortoise burrows.

Permanent effects to 44.8 acres of critical habitat represents a small fraction (0.004 percent) of the 1,020,600 acres of habitat within the Chuckwalla Critical Habitat Unit. Permanent effects to this small portion of critical habitat would not negatively affect the function of the surrounding critical habitat or affect desert tortoise movement in the area as desert tortoise would be able to easily cross the access road and new combat road/trail. The access road and new combat road/trail are not anticipated to negatively affect the primary constituent elements of the adjacent critical habitat.

#### Temporary

Under the Proposed Action, there would be periodic temporary effects to 597.3 acres of occupied desert tortoise critical habitat during military training activities, especially WTI, which occurs biannually. Effects may include vegetation trimming (mainly the upper portion of tall woody vegetation that is not used by desert tortoise); vegetation trampling (through use of LZs and ALZ by MV-22s and military vehicles); increased dust; potential for minor, localized erosion (through rotor downwash); and other types of soil disturbance. Periodic, temporary disturbance to 597.3 acres of critical habitat represents a small fraction (0.06 percent) of the 1,020,600 acres of habitat within the Chuckwalla Critical Habitat Unit.

These effects would be temporary due to the occasional use of the LZs and ALZ mainly by the biannual WTI training. To minimize the effect of dust and provide a safe aircraft landing environment, an eco-safe, biodegradable, liquid copolymer dust palliative (e.g., brand name "Envirotac II") may be applied to the LZs for dust suppression.

## <u>Indirect</u>

Indirect effects to desert tortoise critical habitat may include decreased photosynthetic capacity due to increased dust, potential for wildfire to damage and destroy vegetation (both within and outside of proposed training support areas), potential to spread invasive weed species, and others. An increase in dust is unlikely to negatively affect vegetation due to natural windy/dusty conditions that occur within the Colorado Desert (especially within the Imperial Valley and surrounding areas). Desert vegetation is adapted to windy and dusty conditions and areas that require dust abatement for safety purposes would have a dust palliative applied, which would also reduce dust on adjacent vegetation. The potential for wildfires to damage and destroy vegetation is low since the exhaust of the MV-22 should not heat the ground to a temperature high enough to support combustion of plant-based materials such as dry grasses (USMC and U.S. Forest Service 2013). This is because exhaust deflectors activate as soon as there is weight on the main landing gear wheels, thereby ensuring that the aircraft operates with the exhaust deflectors on at all times when on the ground and reducing the potential for wildfire ignition to low (Marine Corps Air Ground Combat Center 2010). As detailed in Chapter 2.2 (Measure 22), in an effort to control the spread of invasive weeds, especially those originating from outside of the CMAGR, all construction-type equipment and/or construction-type vehicles originating outside of the CMAGR would be power-washed before entering roadways on the way to the CMAGR. This would apply to vehicles that originate from outside of the CMAGR that are brought in to conduct AFA Burt 2.0 access road grading. If the vehicles originate within the CMAGR, then no additional measures to reduce the spread of weeds that already exist on the CMAGR are required.

### Summary of Effects to Critical Habitat

The use of MV-22s at the CMAGR was previously analyzed in the 2015 BO (USFWS 2015) in which MV-22s were authorized to land anywhere that legacy rotary-wing aircraft could operate. The Proposed Action would involve the landing of MV-22s and the establishment of a new combat road/trail to AFA Burt 2.0 within desert tortoise critical habitat. The permanent effect of up to 44.8 acres and temporary disturbance of up to 597.3 acres of desert tortoise critical habitat would be consistent with current use of the CMAGR. Effects to this small portion of critical habitat would not negatively affect the function of the surrounding critical habitat, affect desert tortoise movement in the area, or negatively affect the

primary constituent elements of the adjacent critical habitat. Moreover, all effects would be limited to 642.1 acres, or 0.06 percent, of the 1,020,600-acre Chuckwalla Critical Habitat Unit.

#### 4.1.3 <u>Cumulative Effects</u>

The area considered in this cumulative effects analysis is the entire CMAGR. Implementation of the Proposed Action and other projects within the CMAGR have the potential to result in the cumulative loss of biological resources in the form of vegetation, habitat, and species. The Proposed Action would result in the permanent loss and temporary disturbance to vegetation communities and cover types that are occupied by desert tortoise. All federal activities within the CMAGR potentially affecting desert tortoise are subject to ESA Section 7 consultation and require the issuance of (or consistency with) a BO by the USFWS with reasonable and prudent measures, terms, conditions, and conservation recommendations. Under the ESA, these future federal activities are not considered in this cumulative effects analysis.

Cumulative effects to be considered under the ESA are those effects of future nonfederal (state, local agency, or private) activities on federally listed species that are reasonably certain to occur within the area affected by the Proposed Action. Since no non-federal activities are proposed within the Proposed Action Area, no cumulative effects are anticipated.

## CHAPTER 5 CONCLUSION

Based on the analysis of effects presented in Chapter 4, Table 5 presents the USMC's effects determinations for ESA-listed species and critical habitat from implementation of the Proposed Action within the Proposed Action Area.

Species or Habitat	Effects Determination
Desert Tortoise	May affect and is likely to adversely affect.
Desert Tortoise Critical Habitat	May affect and is likely to adversely affect.

The 1996 BO provides for an annual incidental take allowance of 11 tortoises injured/killed, and 112 tortoises harassed per year across the CMAGR. No take has been reported/identified in recent years at the CMAGR and there is no evidence that annual take has ever exceeded the 1996 BO allowance. The potential incidental take associated with the Proposed Action is not likely to increase the potential take within the CMAGR to a level that exceeds the take limits established in the 1996 BO. The implementation of the proposed measures (Chapter 2.2) would greatly reduce the potential to injure or harass desert tortoises. Therefore, the Proposed Action may affect and is likely to adversely affect the desert tortoise and desert tortoise critical habitat.

## CHAPTER 6 REFERENCES

- Bowles, A.E., S. Eckert, L. Starke, E. Berg, L. Wolski, and J. Matesic, Jr. 1999. Effects of flight noise from jet aircraft and sonic booms on hearing, behavior, heart rate, and oxygen consumption of desert tortoise (*Gopherus agassizii*). Sea World Research Institute, Hubbs Marine Research Center, San Diego, CA. p. 131.
- Department of the Navy (DON). 2013. Final Legislative EIS for the Renewal of the CMAGR Land Withdrawal. April.
- Jørgensen, C. B. 1998. Role of urinary and cloacal bladders in chelonian water economy: historical and comparative perspectives. Biological Review 73: pp. 347-366.
- Marine Corps Air Ground Combat Center. 2010. Aerial Maneuver Zones for MV-22 and Rotary-Wing Training at the Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center, Twenty-nine Palms, California. May.
- Marine Corps Air Station (MCAS) Yuma. 2013. Range and Training Areas Standard Operating Procedures (StaO 3710.6J). 30 January.
- Marine Corps Air Station (MCAS) Yuma. 2017. Integrated Natural Resources Management Plan for the Chocolate Mountains Aerial Gunnery Range, California. February.
- Nagy, K.A. and P.A. Medica. 1986. Physiological Ecology of Desert Tortoises in Southern Nevada. Herpetologica 42: pp. 73-92.
- Nussear, K.E., T.C. Esque, R.D. Inman, L. Gass, K.A. Thomas, C.S.A. Wallace, J.B. Blainey, D.M. Miller, and R.H. Webb. 2009. Modeling Habitat of the Desert Tortoise (Gopherus agassizii) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona. U.S. Geological Survey Open-file Report 2009-1102. 18 pp.
- Ouren, D.S., C. Haas, C.P. Melcher, S.C Stewart, P.D. Ponds, N.R. Sexton, L. Burris, T. Fancher, and Z.H. Bowen. 2007. Environmental effects of off-highway vehicles on Bureau of Land Management lands: a literature synthesis, annotated bibliographies, extensive bibliographies, and internet resources. U.S. Geological Survey Open-File Report 2007-1353.
- Sharifi, M.R., A.C. Gibson, and P.W. Rundel. 1997. Surface Dust Impacts on Gas Exchange in Mojave Desert Shrubs. Journal of Applied Ecology 34.
- U.S. Fish and Wildlife Service (USFWS). 1996. Biological Opinion for the Military Use of the CMAGR, CA (1-6-96-F-40). 18 April.
- USFWS. 2009. Desert Tortoise (Mojave Population) Field Manual: (Gopherus agassizii). Region 8, Sacramento, California.

- USFWS. 2015. Proposed SWATs 4 and 5 Amendment to Biological Opinion 1-6-95-F-40 for Military Use of the Chocolate Mountain Aerial Gunnery Range, Imperial and Riverside Counties, California. November 9.
- USFWS. 2019. Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii). October 8.
- Upekala C.W, S.J. Scoles-Sciulla, and L.A. Defalco. 2009. Dust Deposition Effects on Growth and Physiology of the Endangered *Astragalus jaegerianus* (Fabaceae). Madroño 56:81-88.
- USMC and U.S. Forest Service. 2013. Final Environmental Assessment for the United States Marine Corps Rotary Wing and Tilt-Rotor Training Operations on Public Lands within Southern California. March.
- USMC. 2011. Final Biological Assessment for Land Acquisition and Airspace Establishment to Support Large-Scale Marine Air Ground Task Force Live-Fire and Maneuver Training. Marine Corps Air Ground Combat Center, Twentynine Palms, CA. July 2011.
- USMC. 2012. Environmental Assessment for P-771 Proposed Infrastructure Improvements, Camp Billy Machen, CA. April.
- USMC. 2013. Environmental Assessment for the Tactical Employment of MV-22 Osprey Tiltrotor Aircraft in Support of Marine Corps Training & Readiness Operations at MCB Camp Pendleton, California. April.
- Vegetation Classification and Mapping Program (VegCAMP), California Department of Fish and Wildlife (CDFW), and Aerial Information Systems Inc. 2013. California desert vegetation map and accuracy assessment in support of the desert renewable energy conservation plan. Prepared for the California Department of Fish and Wildlife Renewable Energy Program and the California Energy Commission.
- Vernadero Group Inc. 2020. 2020 Line Distance Sampling for Desert Tortoises at Chocolate Mountain Aerial Gunnery Range. Submitted by Vernadero Group Inc. to Marine Corps Air Station Yuma, Arizona, and Naval Facilities Engineering Command Southwest, California.

# **APPENDIX** A

# DESERT TORTOISE SURVEY REPORT

## FINAL DESERT TORTOISE SURVEY REPORT

## In Support of

Environmental Assessment for Cactus West MV-22 Landing Zones, Assault Landing Zones, and Drop Zones Marine Corps Air Station Yuma, Arizona

Prepared for:



Department of the Navy Naval Facilities Engineering Command Southwest 937 North Harbor Drive San Diego, CA 92132-5190

Prepared Under: Contract Number: N62470-16-D-9002 Task Order: N6247320F5437

Prepared by:

AECOM 401 West A Street, Suite 1200 San Diego, CA 92101 Phone: (619) 610-7600 7Fax: (619) 610-7601

## **APRIL 2021**

## TABLE OF CONTENTS

1.0	INTI	RODUCTION	1
	1.1	Purpose of the Survey Report	. 1
	1.2	Project Background	. 1
	1.3	Survey Area Description	. 2
2.0	DES	ERT TORTOISE	6
	2.1	Survey Methods	. 6
	2.2	Survey Results	. 9
3.0	DISC	CUSSION	19
4.0	REF	ERENCES CITED	.22

## LIST OF FIGURES

Figure 1	Regional Map	. 3
Figure 2	Desert Tortoise Survey Areas	. 7
Figure 3	Salvation Pass East Survey Area	13
Figure 4	Salvation Pass Survey Area	14
Figure 5	Salvation Pass West Survey Area	15
Figure 6	PA 1 Survey Area	16
Figure 7	PA 2 Survey Area	17
Figure 8	Pina Survey Area	18

### LIST OF TABLES

Table 1	Desert Tortoise Survey Areas	5
Table 2	Survey Dates, Personnel, and Weather Summary	9
Table 3	Desert Tortoise Survey Results 1	1

## LIST OF APPENDICES

Appendix A	Wildlife Species Detected during Desert Tortoise Surveys
Appendix B	Representative Survey Area and Desert Tortoise Photographs

## ACRONYMS AND ABBREVIATIONS

AFA	Artillery Firing Area
ALZ	Assault Landing Zone
BMGR-West	Barry M. Goldwater Range-West
BSTRC	Bob Stump Training Range Complex
CMAGR	Chocolate Mountain Aerial Gunnery Range
DZ	Drop Zone
GPS	global positioning system
LZ	Landing Zone
MCAS	Marine Corps Air Station
MCL	mean carapace length
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USMC	U.S. Marine Corps

## 1.0 INTRODUCTION

This survey report details the methods and results of focused desert tortoise (*Gopherus agassizii*) surveys conducted in March 2021 for Marine Corps Air Station (MCAS) Yuma, Arizona, on lands located in the Chocolate Mountain Aerial Gunnery Range (CMAGR) in eastern Riverside and Imperial Counties, California (Figure 1). The U.S. Marine Corps (USMC) is in the process of preparing an Environmental Assessment to establish and use new landing zones (LZs), assault landing zones (ALZs), drop zones (DZs), and an artillery firing area (AFA) at the two tactical ranges within the Bob Stump Training Range Complex (BSTRC): the CMAGR (located in California) and the Barry M. Goldwater Range-West (BMGR-West; located in Arizona), as part of the proposed action for the environmental assessment. The USMC does not propose to increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC for the project. Desert tortoise surveys were not conducted at BMGR-West. Desert tortoise surveys were conducted across seven different survey areas within the CMAGR that include the following proposed training components: one LZ, four ALZs, one unimproved ALZ, and one AFA (hereafter referred to as the project).

## 1.1 Purpose of the Survey Report

This survey report describes the focused desert tortoise surveys conducted in compliance with the U.S. Fish and Wildlife Service (USFWS) guidance outlined in the document titled *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2019). The pre-project surveys were conducted to support environmental documentation for Endangered Species Act section 7 consultation with the USFWS. Pre-project surveys were conducted to estimate the number of desert tortoises to be potentially impacted by the project and the results of the surveys are detailed herein.

## 1.2 Project Background

The CMAGR is a USMC Range located east of the Salton Sea in the southeastern corner of California in Riverside and Imperial Counties (Figure 1). The CMAGR is approximately 459,000 acres and includes several sensitive biological resources, which are managed in compliance with the Sikes Act of 1960 by the *Integrated Natural Resources Management Plan for the Chocolate Mountains Aerial Gunnery Range, California* (hereafter, 2017 CMAGR INRMP; MCAS Yuma 2017).

The CMAGR is one of the most intensively used ranges in the Yuma Training Range Complex, providing extensive land space and airspace areas for military aviation training. During World War II, General George S. Patton, Jr., established the Desert Training Center for training in desert

survival and warfare. The Desert Training Center encompassed 18,000 square miles in southeastern California, western Arizona, and southern Nevada. The Center was later renamed as the California-Arizona Maneuver Area and included Camp Young and 10 divisional camps. The Chocolate Mountains, in addition to its association with desert training, became the site for Camp Dunlap, a Marine Training Center, which later became the CMAGR. Since World War II, CMAGR land and airspace have served as a bombing range. The cantonment for Camp Billy Machen was constructed in the western CMAGR in 1966 and serves as a training camp for the Navy SEALs (MCAS Yuma 2011).

To date, the CMAGR is used as a training range for predominantly air-based defenses, including fixed-wing aircraft and helicopters. The range is used for live-fire training and a range of ground support areas, target complexes, individual target sites, and other training facilities. The CMAGR supports training activities for the USMC and Department of the Navy, including air tactics; close air support missions; laser system operations; and air-to ground bombing, rocket, and strafing exercises. The Desert Training Facility within the CMAGR is primarily used for SEAL platoon pre-deployment training and other requirements including air and ground maneuvers, indirect weapons, and demolition firing (MCAS Yuma 2011).

Specific to the project, aircraft that are used in training at the CMAGR originate from squadrons based at MCAS Yuma and MCAS Miramar and include the MV-22. Various air combat training activities occur regularly at the CMAGR including the use of MV-22s, which are currently being expanded. The project would provide necessary training support areas for use of MV-22s in several locations throughout the CMAGR.

## **1.3** Survey Area Description

The project is located within the southwestern portion of the Colorado Desert Recovery Unit for the desert tortoise and is north and east of the eastern edge of the Salton Sea. The survey areas are classified as having a low to high potential for the desert tortoise based on the U.S. Geological Survey (USGS) desert tortoise habitat potential model (Nussear et al. 2009). Habitat along the gradually west-sloped side of the Chocolate Mountains is predicted to be lower quality for the desert tortoise compared with higher quality habitat near the base of, within, and east of the Chocolate Mountains.

Regionally, the project is situated within the Colorado Desert on sloped, open terrain dominated by desert scrub vegetation interspersed with small drainages and washes. Federally designated critical habitat for the desert tortoise within the Chuckwalla Critical Habitat Unit is located on the east side of the CMAGR and overlaps with portions of the project. Table 1 details the seven desert



Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# **FIGURE 1 OVERVIEW MAP**

This page intentionally left blank.

tortoise survey areas, totaling 1,410.6 acres, as well as which survey areas are within the Chuckwalla Critical Habitat Unit. The seven survey areas, along with USFWS desert tortoise critical habitat, are shown on Figure 2.

Table 1 Desert Tortoise Survey Areas							
Survey Area	Training Support Area Type	Within Chuckwalla Critical Habitat Unit					
PA 1 (AFA Burt 2.0 and access roads)	AFA	86.8	Yes				
PA 2 (ALZ Bull)	Unimproved ALZ	12.9	No				
Pina	LZ	68.3	Yes				
Salvation Pass West (Multi-Ship South)	ALZ	738	No				
Salvation Pass East (Multi-Ship North)	ALZ	487	Yes				
Salvation Pass (Single Ship North 1 and 2) <sup>1</sup>	ALZ	17.6	No				
Total		1,410.6					

<sup>1</sup>Includes two small separate survey areas.

All seven desert tortoise survey areas include the physical and biological features of desert tortoise critical habitat as described in USFWS 2019. These include:

- sufficient space to support viable populations within each of the recovery units and to provide for movement, dispersal, and gene flow;
- sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;
- suitable substrates for burrowing, nesting, and overwintering;
- burrows, caliche caves, and other shelter sites;
- sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

The survey areas contain three main natural communities based on the mapping (VegCAMP et al. 2013) in the 2017 CMAGR INRMP (MCAS Yuma 2017). The west side of the Chocolate Mountains is predominantly Madrean Warm Semi-Desert Wash Woodland/Scrub interspersed with Lower Bajada and Fan Mojavean-Sonoran Desert Scrub. Both within and on the east side of the Chocolate Mountains, the survey areas include sections of North American Warm Desert Bedrock Cliff and Outcrop along with Lower Bajada and Fan Mojavean-Sonoran Desert Scrub.

#### 2.0 DESERT TORTOISE

#### 2.1 Survey Methods

Desert tortoise surveys were conducted in accordance with the most recent guidance from the USFWS detailed in *Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2019). The purpose of the surveys is to support project-specific Endangered Species Act consultation with the USFWS and, as such, the surveys employed 100 percent coverage of the seven survey areas (detailed in Table 1 and displayed on Figure 2).

Per the protocol, desert tortoises are generally most active April through May and September through October when air temperatures are below 35°Centigrade (95°Fahenheit; Walde et al. 2003). Air temperature is measured approximately 5 centimeters from the soil surface in an area of full sun, but in the shade of the observer. Given range access constraints on the CMAGR, desert tortoise surveys were conducted in early to mid-March 2021. While surveys were conducted earlier than the USFWS 2019 protocol states, temperatures are generally warmer earlier in the season near the southern extent of the species range including the CMAGR. Furthermore, because surveys used 100 percent coverage and were not probabilistic in nature, and desert tortoises are known to be active and above ground in March on the CMAGR (based on the 2020 Line Distance Sampling for Desert Tortoises at Chocolate Mountains Aerial Gunnery Range; Vernadero Group 2020) survey timing was determined as appropriate. Finally, email dialogue with Natural Resources Staff at MCAS Yuma confirmed that the March timeframe was appropriate for detecting desert tortoises on the CMAGR, as confirmed by the USFWS.

Focused 100 percent coverage desert tortoise surveys were conducted by AECOM biologists at all seven survey areas. Surveys consisted of biologists slowly walking 10-meter-wide spaced transects searching for all desert tortoise sign. Surveyors walked an average of 2 to 12 miles of transects per day per biologist depending upon the location of the survey areas and amount of survey area left to be covered. A team of approximately three to six biologists (including two biologists previously designated as Authorized Biologists by the USFWS) conducted the surveys. All desert tortoise sign (shell fragments, bones, scutes, carcasses, drinking depressions, mating rings, scat, burrows, tracks, and live individuals) were recorded. A hand-held mirror or light was used to examine any potential desert tortoise burrows for occupancy. All surveys were not conducted if temperatures exceeded 35°Centigrade (95°Fahenheit) in the shade when measured approximately 5 centimeters from the soil surface above the ground.



#### AECOM Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# **FIGURE 2 DESERT TORTOISE SURVEY AREAS**

This page intentionally left blank.

Data collected followed the guidelines in the most recent survey protocol (USFWS 2019). Data was collected electronically and uploaded to a secured server every evening. Data was recorded on digital tablets or similar devices that operated custom-designed desert tortoise forms using the software data collection platform known as Fulcrum. All desert tortoise sign had its location recorded via geographic positioning system (GPS). Data recorded included the survey date, names of all surveyors, start and end times, weather conditions, and any evidence that indicated desert tortoises were present (e.g., scat, burrows, carcasses, courtship rings, drinking depressions, etc. in addition to live tortoises). Additional information such as incidentally detected wildlife species was also recorded. The USFWS Field Manual (USFWS 2009) was used to categorize the condition of all potential burrows detected. For every live desert tortoise found, the mean carapace length (MCL) was estimated, along with the tortoise gender, if it had a transmitter, its general health (if its face was visible), and any additional distinguishing marks. All observed desert tortoise sign regardless of where it was detected within the survey areas was recorded. All wildlife species incidentally detected during desert tortoise surveys were also recorded.

### 2.2 Survey Results

Desert tortoise surveys dates, personnel, survey location, start/end times, and weather conditions are detailed in Table 2.

Table 2 Survey Dates, Personnel, and Weather Summary							
Date	Survey Personnel	Survey Location	Start/ End	Time	Weather Summary	Temp. (°F)	Average Wind Speed (mph)
03/01/2021	Andrew Fisher, Angelique Herman, Ayoola Folarin,	Salvation Pass East (Multi-Ship	Start	10:33 AM	Sunny and cool	71	3
	Parent, Emma Fraser	North)	End	4:45 PM	Clear, cool	67	3
03/02/2021	Andrew Fisher, Angelique Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	Salvation Pass East (Multi-Ship North)	Start	9:34 AM	Sunny, light breeze	68	4
			End	3:49 PM	Sunny, cool	74	0
03/03/2021	Andrew Fisher, Angelique Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	Salvation Pass East (Multi-Ship North)	Start	8:08 AM	Sunny, light breeze	64	6
			End	3:26 PM	Breezy and light rain	58	6
		Salvation Pass	Start	7:38 AM	Sunny, cool	55	0
03/04/2021	Andrew Fisher, Angelique Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	East (Multi-Ship North) and Salvation Pass (Single Ship North 1 and 2)	End	2:00 PM	Sunny, light breeze	73	3

	Table 2 Survey Dates, Personnel, and Weather Summary							
Date	Survey Personnel	Survey Location	Start/ End	Time	Weather Summary	Temp. (°F)	Average Wind Speed (mph)	
02/05/2021	Andrew Fisher, Angelique Herman, Avoola Folarin,	Salvation Pass	Start	7:11 AM	Sunny, light breeze	62	2	
05/05/2021	Bonnie Hendricks, John Parent, Emma Fraser	South)	End	2:56 PM	Sunny, warm	81	2	
	Andrew Fisher, Angelique	Salvation Pass	Start	7:10 AM	Sunny, cool	63	2	
03/06/2021	Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	West (Multi-Ship South)	End	3:19 PM	Sunny, light breeze	86	5	
03/07/2021	Andrew Fisher, Angelique Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	Salvation Pass West (Multi-Ship South)	Start	7:06 AM	Sunny, partially cloudy and breezy	64	3	
			End	2:47 PM	Sunny	86	2	
	Andrew Fisher, Angelique Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	Salvation Pass West (Multi-Ship South)	Start	7:15 AM	Sunny	61	1	
03/08/2021 He Bo			End	2:05 PM	Sunny	77	4.5	
	Andrew Fisher, Angelique	PA 1 (AFA Burt	Start	7:33 AM	Sunny	60	2	
03/09/2021	Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	2.0 and access roads	End	12:09 PM	Sunny, breezy	69	14.5	
	Andrew Fisher, Angelique		Start	8:23 AM	Sunny	58	3.4	
03/10/2021	Herman, Ayoola Folarin, Bonnie Hendricks, John Parent, Emma Fraser	PA 2 (ALZ Bull)	End	9:56 AM	Sunny	62	3	
02/16/2021	Emma Fraser, Ayoola	Pina (AFA 8)	Start	9:09 AM	Sunny	51	1	
03/10/2021	Folarin, Frances Glaser		End	2:54 PM	Sunny	69	2.5	
02/17/2021	Emma Fraser, Ayoola		Start	8:43 AM	Sunny	60	0	
03/1//2021	Folarin, Frances Glaser	rina (AFA 8)	End	10:21 AM	Sunny	67	0	

Surveys were generally conducted on sunny days with mild springtime temperatures. Most survey areas contained little evidence of fresh annual vegetation growth. The previous winter was dry and based on rainfall data from the Western Regional Climate Center for the Mecca Fire Station (which was the closest reporting station with rainfall data for 2020 and 2021; WRCC 2021), the area received 0.26 inch (7 millimeters) of rainfall between October 2020 and March 2021.

Across all survey areas, desert tortoise sign was relatively scarce but highly localized in the few areas where it was detected. Two adult desert tortoises were detected in the northwestern corner of Salvation Pass East, with an additional adult tortoise detected outside the survey area. No desert tortoises were detected within the two small survey areas of Salvation Pass and three adult desert tortoises were detected along the southern border of Salvation Pass West. Three adult desert tortoises were detected within PA 1, with a fourth desert tortoise detected outside the survey area and walking towards a desert tortoise located within PA 1. No desert tortoises were detected at PA 2 or Pina. Table 3 provides a breakdown of the number of live adult desert tortoises detected per survey area (desert tortoises observed outside of survey areas are not counted in Table 3), along with the number of burrows (and their classifications), carcasses, scat, and eggshell fragments. In regards to the number of carcasses detected per survey area, both intact whole carcasses in addition to shell fragments and scattered carcass remains are included together.

Table 3 Desert Tortoise Survey Results								
Desert Tortoise Sign by Survey Location		Salvation Pass East	Salvation Pass	Salvation Pass West	PA 1	PA 2	Pina	Total
Live	Adult (≥180 mm MCL)	21	0	3	31	0	0	8
Desert Tortoise	Subadult/Juvenile (<180 mm MCL)	0	0	0	0	0	0	0
Burrows	Class 1	0	0	2	1	0	0	3
	Class 2	1	0	3	0	0	0	4
	Class 3	1	0	0	0	0	0	1
	Class 4	12	1	10	0	0	6	29
	Class 5	12	1	3	2	0	7	25
Carcasses	Intact carcasses and scattered shell/bone fragments	9 adult (four female, one male, and four of unknown sex) and 1 subadult	1	5 adult (one female, one male, and three of unknown sex)	1	0	0	17
Scat		0	0	5	1	0	0	6
Eggshell Fragments		1	0	0	0	0	0	1

Notes:

<sup>1</sup> One adult desert tortoise was found just outside of the survey area and, therefore, is not included here.

<sup>2</sup> The following burrow class definitions were adopted from the USFWS Field Manual (USFWS 2009) and are defined as:

- 1. currently active, with desert tortoise or recent desert tortoise sign
- 2. good condition, definitely desert tortoise; no evidence of recent use
- 3. deteriorated condition; this includes collapsed burrows; definitely desert tortoise (please describe)
- 4. good condition; possibly desert tortoise (please describe)
- 5. deteriorated condition; this includes collapsed burrows; possibly desert tortoise (please describe)

All desert tortoise sign detected (and detailed in Table 3) was mapped by GPS and is displayed on survey area-specific Figures 3 through 8. There were several overarching general trends in terms of where desert tortoise sign was located based on the survey area. Generally, there was more

desert tortoise sign, including live adult desert tortoises on the north and east sides of the Chocolate Mountains, which is in line with the USGS habitat mapping and the USFWS critical habitat designation.

While biologists conducted desert tortoise surveys, they incidentally recorded all wildlife species detected based on direct observations (or heard), scat, tracks, and other sign. A complete list of all wildlife species detected is provided in Appendix A. Representative photographs of the survey areas and desert tortoises are provided in Appendix B. The following section briefly describes the results of surveys within each specific survey area in the order surveyed.

**Salvation Pass East**: This survey area contains a small, very steep and rocky outcrop in the northwestern corner (Photograph 1) where two live desert tortoises (one adult male and one presumed female) were found (Photograph 2). Several Class 1 burrows and scat were also found along the rocky steep slopes. One adult female tortoise was found to the west outside of the survey area. One partial eggshell fragment was found at the bottom of the rocky outcrop with no nearby burrows. The only sign of subadult/juvenile desert tortoise presence was a partially chewed carcass of a small desert tortoise that had been stashed between pencil cholla in association with a large woodrat midden (Photograph 3). Several old carcasses were scattered around the survey area, mainly on the northern edge in association with washes.

**Salvation Pass**: The two small survey areas within Salvation Pass did not have any recent desert tortoise sign in them, and the sandy substrate likely precludes desert tortoises from using the area for burrowing (Photograph 4).

**Salvation Pass West**: This large survey area had a small amount of desert tortoise sign on the northern boundary (one Class 1 burrow with tracks in it, but no desert tortoise observed), and three live adult desert tortoises in the southern half of the survey area (Photographs 5 and 6). Several Class 1 burrows were also detected in the southern half of the survey area within a semi-stabilized portion of the wide wash that traverses the survey area from the Chocolate Mountains southwest towards the Salton Sea and Imperial Valley.

**PA 1**: Along the main access road, very little desert tortoise sign was found. However, within the AFA and the new combat road/trail, three adult live tortoises (two adult females and one male) were detected (Photographs 7 and 8). One additional adult male was detected just outside of the new combat road/trail walking towards a female in a burrow within the new combat road/trail. No scat was detected, and the only burrows detected were occupied or in the immediate vicinity of a desert tortoise. The area has several small drainages (between patches of desert pavement) with abundant annuals where desert tortoises were feeding.



Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# **FIGURE 3** SALVATION PASS EAST SURVEY AREA



Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 4 SALVATION PASS SURVEY AREA

ALIFORNIA Mexicali Sall Luis Ric Colorad Cardno 2021; US Census 2010; USFWS 1994; Sources: Esri, USGS,



Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# FIGURE 5 SALVATION PASS WEST SURVEY AREA



Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

# **FIGURE 6 PA1 SURVEY AREA**


#### AECOM

Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

## FIGURE 7 PA2 SURVEY AREA



#### AECOM

Desert Tortoise Survey Report in Support of MV-22 Landing Zones, Assault Landing Zones, and Drop Zones, MCASY

## **FIGURE 8 PINA SURVEY AREA**

**PA 2**: No sign of desert tortoise occupancy was detected during the surveys. During surveys at PA 2, AECOM biologists noticed that the survey area traversed several large washes that contained tall desert wash woodland vegetation (Photograph 9). PA 2 is oriented perpendicular to washes that have the potential to cause significant scour during high rain events and erode the ALZ. Therefore, AECOM biologists suggested an alternative location perpendicular to the PA 2 survey area that would be less likely to experience periodic scour from rain events. This alternative location is shown on Figure 7 as Revised PA 2 and overlaps a portion of the original PA 2. Although the original PA 2 was surveyed for desert tortoises, for the purposes of the USFWS consultation, survey results will be extrapolated to the alternative and Revised PA 2.

**Pina**: No sign of desert tortoise occupancy was detected during the surveys despite the habitat appearing suitable (Photograph 10). No live adult desert tortoise, no definitive desert tortoise burrows (Class 1 or 2), and no scat were detected. Several burrows more characteristic of desert kit fox were observed and recorded, but none had diagnostic traits of desert tortoise burrows.

### 3.0 DISCUSSION

All seven of the desert tortoise survey areas are suitable and most of the survey areas should be considered occupied by the desert tortoise. The desert tortoise surveys represent a snap-shot in time to document desert tortoise use of the survey areas following a dry winter. Very little new annual growth was detected within the survey areas and very little scat was detected. Surveys were conducted early in the spring season, and many of desert tortoises were detected in proximity to a burrow.

The USFWS 2019 protocol was reviewed to determine if using Table 2 would be appropriate for estimating the number of desert tortoises within the survey area and project. Based on the seven separate survey areas (some of which are spread far apart and on opposite sides of the Chocolate Mountains), it was determined that combining them to generate one survey area and generate an estimate for the number of desert tortoises within that area would be inaccurate. All survey areas apart from Salvation Pass West (738 acres) meet the criteria for Small Project Surveys (to be used for areas less than 500 acres) as outlined in USFWS 2019. Based on the protocol for Small Project Surveys, the action areas of small projects are less likely to include the entire home ranges of desert tortoises; therefore, desert tortoises that regularly use the area may be offsite during the surveys. Hence, the USFWS does not recommend using the Table 2 spreadsheets to provide a point estimate and confidence interval for larger tortoises or estimated number of small desert tortoises. Therefore, this survey report does not include the calculations provided by the spreadsheet in Table 2 of USFWS 2019.

The following text describes the habitat-specific conditions based on survey results to understand desert tortoise occupancy within the survey areas.

**Salvation Pass East**: Desert tortoises were located in topographically elevated areas near the northwestern edge of the survey area. No active desert tortoise burrows or recent sign of desert tortoise occupancy was found in the middle of the survey area. The presence of stable rocky soils capable of holding a burrow appeared restricted primarily to the periphery of the survey area. While many desert kit fox, coyote, and small mammal burrows were detected throughout the survey area, none contained the classic half-moon shape characteristic of desert tortoise burrows. Live desert tortoises were only detected in the hills around the periphery of the survey area, and several carcasses were detected in washes within the survey area. Finally, while no desert tortoise scat or burrows were detected within the central portion of the survey area.

The area does not appear regularly affected by any human activities and, while several old bomb craters were detected (along with widely dispersed shrapnel), no recent sign of human disturbance that would preclude use of the area by desert tortoises was observed.

**Salvation Pass**: The two small survey areas within Salvation Pass are predominantly deep sandy soils that are unlikely to support desert tortoise burrows. No kit fox or other fossorial mammal burrows were detected within the survey areas and the substrate is likely not suitable. Periodic rain events that cause strong surface flow through this incised section of Salvation Pass likely reduce the potential that burrows remain intact. Furthermore, very little annual vegetative growth was observed. Both survey areas are located directly within the vehicle travel route through Salvation Pass, and vehicle movement through Salvation Pass likely restrict annual vegetation growth.

**Salvation Pass West**: This survey area is relatively flat with a strong northeast to southwest slope with many small washes draining the Chocolate Mountains (to the east) and directing water flow towards the Salton Sea to the southwest. Compared with the east side of the Chocolate Mountains, the soil was much rockier with fewer annuals. The surface soil appeared influenced by periodic flood and scour events where large rock and debris scrape the surface free of annual growth. The only locations where desert tortoises and burrows were located was along the southern edge of the survey area in stabilized areas that were slightly elevated above the level where surface flow might occur. A dirt road that leads to Salvation Pass bisects the middle of this survey area and no desert tortoise sign was detected near the road.

**PA 1**: This survey area is primarily desert pavement interspersed with small drainages that contain abundant annuals. The soils were more stabilized than other survey areas and capable of supporting burrows. The habitat was composed of less large rock and had large open areas between veins of desert woodland. One female desert tortoise and burrow were located in the middle of the survey area and a large mature male tortoise was located a short distance away in a small gap in the desert pavement feeding on fresh annual growth. An additional female tortoise was found emerging from a burrow and a male tortoise (found outside the survey area) was observed walking towards the

female. Hence, PA 1 appears to contain a relatively high density of desert tortoises compared to the other survey areas.

**PA 2**: This survey area is primarily desert wash and lacks stable soils in which desert tortoises can construct burrows. PA 2 contains small sections of desert pavement interspersed with step-incised washes with large rocks and sandy substrate that is not ideal for desert tortoise occupancy. While desert tortoises may forage and transit through the area, they are likely to select locations that are outside washes with more stable substrate for burrowing. While the Revised PA 2 was not surveyed for desert tortoises in March 2021, due to its overlap and adjacency to the original PA 2, it is likely similar to the original PA 2 and to contain a low density of desert tortoises.

**Pina**: Despite the survey area being located on the east side of the Chocolate Mountains near the northern part of the CMAGR where desert tortoise densities are generally higher, no desert tortoise or recent evidence was detected during surveys. The survey area has small topographical undulations that have potential to support desert tortoise burrows, but none were detected. The survey area is likely used periodically by desert tortoises, but overall, the vegetation seemed drier (many tall, dense cacti were scattered throughout the survey area) with a low abundance of annuals.

#### 4.0 **REFERENCES CITED**

- Marine Corps Air Station (MCAS) Yuma. 2011. Integrated Cultural Resources Management Plan for the Chocolate Mountain Aerial Gunnery Range, California. Prepared by AECOM.
- Marine Corps Air Station (MCAS) Yuma. 2017. Integrated Natural Resources Management Plan for the Chocolate Mountains Aerial Gunnery Range, California. February.
- Nussear, K.E., T.C. Esque, R.D. Inman, L. Gass, K.A. Thomas, C.S.A. Wallace, J.B. Blainey, D.M. Miller, and R.H. Webb. 2009. *Modeling Habitat of the Desert Tortoise (Gopherus agassizii) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona*. U.S. Geological Survey Open-file Report 2009-1102. 18 pp.
- U.S. Fish and Wildlife Service (USFWS). 2009. Desert Tortoise (Mojave Population) Field Manual: (Gopherus agassizii). Region 8, Sacramento, California.
- USFWS. 2019. Preparing for Any Action That May Occur within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*). October 8.
- Vegetation Classification and Mapping Program (VegCAMP), California Department of Fish and Wildlife (CDFW), and Aerial Information Systems Inc. 2013. California desert vegetation map and accuracy assessment in support of the desert renewable energy conservation plan.
  Prepared for the California Department of Fish and Wildlife Renewable Energy Program and the California Energy Commission.
- Vernadero Group Inc. 2020. 2020 Line Distance Sampling for Desert Tortoises at Chocolate Mountain Aerial Gunnery Range. Submitted by Vernadero Group Inc. to Marine Corps Air Station Yuma, Arizona, and Naval Facilities Engineering Command Southwest, California.
- Walde, A.D., L. Bol, D.K. Delaney, and L.L. Pater. 2003. The Desert Tortoise: A Preliminary Analysis of Operative and Environmental Temperatures. A Report by the Construction Engineering Research Laboratory to the U.S. Fish and Wildlife Service. 18 pp.
- Western Regional Climate Center (WRCC). 2021. Mecca Fire Station, CA. Total of Precipitation (Inches) for October 2020 through March 2021. Accessed on April 5, 2021 at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5502

## Appendix A

### Wildlife Species Detected during Desert Tortoise Surveys

APPENDIX A
Wildlife Species Detected during Desert Tortoise Surveys

Common Name	Scientific Name	Order	Family
Birds			
Red-tailed Hawk	Buteo jamaicensis	Accipitriformes	Accipitridae
Turkey Vulture	Cathartes aura	Accipitriformes	Cathartidae
Greater Roadrunner	Geococcyx californianus	Cuculiformes	Cuculidae
Gambel's Quail	Callipepla gambelii	Galliformes	Odontophoridae
Common Raven	Corvus corax	Passeriformes	Corvidae
Black-throated Sparrow	Amphispiza bilineata	Passeriformes	Emberizidae
Sage Sparrow	Artemisiospiza belli/nevadensis	Passeriformes	Emberizidae
Brewer's Sparrow	Spizella breweri	Passeriformes	Emberizidae
White-crowned Sparrow	Zonotrichia leucophrys	Passeriformes	Emberizidae
House Finch	Haemorhous mexicanus	Passeriformes	Fringillidae
Barn Swallow	Hirundo rustica	Passeriformes	Hirundinidae
Tree Swallow	Tachycineta bicolor	Passeriformes	Hirundinidae
Loggerhead Shrike <sup>1</sup>	Lanius ludovicianus	Passeriformes	Laniidae
Sage Thrasher	Oreoscoptes montanus	Passeriformes	Mimidae
Crissal Thrasher <sup>1</sup>	Toxostoma crissale	Passeriformes	Mimidae
Yellow-rumped Warbler	Setophaga coronate	Passeriformes	Parulidae
Black-tailed Gnatcatcher	Polioptila melanura	Passeriformes	Polioptilidae
Phainopepla	Phainopepla nitens	Passeriformes	Ptilogonatidae
Verdin	Auriparus flaviceps	Passeriformes	Remizidae
Cactus Wren	Campylorhynchus brunneicapillus	Passeriformes	Troglodytidae
Say's Phoebe	Sayornis saya	Passeriformes	Tyrannidae
Gila Woodpecker <sup>2</sup>	Melanerpes uropygialis	Piciformes	Picidae
Ladder-backed Woodpecker	Picoides scalaris	Piciformes	Picidae
Butterflies and Moths			
Desert (Felders) Orangetip	Anthocharis cethura	Lepidoptera	Pieridae
Reptiles and Amphibians			
Western Patch-nosed Snake	Salvadora hexalepis	Squamata	Colubridae
Long-nosed Leopard Lizard	Gambelia wislizenii	Squamata	Crotaphytidae
Desert Iguana	Dipsosaurus dorsalis	Squamata	Iguanidae
Zebratail Lizard	Callisaurus draconoides	Squamata	Phrynosomatidae
Desert Horned Lizard	Phrynosoma platyrhinos	Squamata	Phrynosomatidae
Western Side-blotched Lizard	Uta stansburiana elegans	Squamata	Phrynosomatidae

Common Name	Scientific Name	Order	Family	
Great Basin Whiptail	Aspidoscelis tigris	Squamata	Teiidae	
Sidewinder	Crotalus cerastes	Squamata	Viperidae	
Terrestrial Mammals				
Mule Deer	Odocoileus hemionus	Artiodactyla	Cervidae	
Coyote	Canis latrans	Carnivora	Canidae	
Desert Kit Fox	Vulpes macrotis arsipus	Carnivora	Canidae	
Bobcat	Lynx rufus	Carnivora	Felidae	
Black-tailed Jackrabbit	Lepus californicus deserticola	Lagomorpha	Leporidae	
(Desert ssp.)				
Desert Cottontail	Sylvilagus audubonii	Lagomorpha	Leporidae	
Botta's Pocket Gopher	Thomomys bottae	Rodentia	Geomyidae	
Desert Woodrat	Neotoma bryanti	Rodentia	Muridae	
White-tailed Antelope	Ammospermophilus leucurus	Rodentia	Sciuridae	
Squirrel				
Turtles and Tortoises				
Desert Tortoise <sup>3</sup>	Gopherus agassizii	Testudines	Testudinidae	

<sup>1</sup>California Department of Fish and Wildlife Species of Special Concern <sup>2</sup>State Threatened Species <sup>3</sup>Federally Threatened Species

# Appendix B

### **Representative Survey Area and Desert Tortoise Photographs**

#### APPENDIX B Representative Survey Area and Desert Tortoise Photographs

Photograph 1: Salvation Pass East survey area viewed from the western edge looking east across the survey area.



Photograph 2: Adult male desert tortoise located along western edge of Salvation Pass East survey area in hilly rock outcrop.



Photograph 3: Juvenile desert tortoise carcasses detected within woodrat midden on western edge of Salvation Pass East survey area.



Photograph 4: View north towards center of Salvation Pass. Both survey areas within Salvation Pass contain a large sandy wash with multiple vehicle tracks.



<image>

Photograph 5: View north of Salvation Pass West survey area.

Photograph 6: View of adult female desert tortoise emerging from burrow at the base of pencil cholla near the southern edge of Salvation Pass West survey area.



Photograph 7: View west of new access road/trail at PA 1 with adult female desert tortoise in burrow.



Photograph 8: Large adult male desert tortoise in small wash within PA 1 feeding on annual vegetative growth.





Photograph 9: View north through desert washes of the original PA 2 survey area.

Photograph 10: View north of Pina survey area.



This page intentionally left blank.



> 5090 YRMD/KJ June 16, 2021

Mr. Jeff L. Grubbe Chairman Agua Caliente Band of Cahuilla Indians 5401 Dinah Shore Drive Palm Springs, California 92264

Dear Chairman Grubbe:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

INA Lille

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Ms. Patricia Garcia-Tuck, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Robert Miguel Chairman Ak-Chin Indian Community 42507 West Peters and Nall Road Maricopa, Arizona 85138

Dear Chairman Miguel:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR dith

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Ms. Carmen Narcia, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Ms. Sherry Cordova Chairwoman Cocopah Indian Tribe 14515 South Veterans Drive Somerton, Arizona 85350

Dear Chairwoman Cordova:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR hele

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Mr. Justin Brundin, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Bryan Etsitty Acting Director, THPO Colorado River Indian Tribes 26600 Mohave Rd. Parker, Arizona 85344

Dear Mr. Etsitty:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field Number	Site Description	Location	NRHP Determination
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR filles

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California



> 5090 YRMD/KJ June 16, 2021

Mr. Timothy Williams Chairman Fort Mojave Indian Tribe 500 Merriman Avenue Needles, California 92363

Dear Chairman Williams:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno I	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

Jun

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Ms. Linda Otero, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Jordan Joaquin President Fort Yuma Quechan Tribe P.O. Box 1899 Yuma, Arizona 85366

Dear President Joaquin:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

ILLIAM R. SELLARS

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Mr. Manfred Scott and Ms. Jill McCormick, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Stephen Lewis Governor Gila River Indian Community P.O. Box 97 Sacaton, Arizona 85147

Dear Governor Lewis:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

UR fills

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: GRIC-THPO, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Ms. Christina C. Andrews Chairwoman Hia-Ced Hemajkam 10710 E. Pathside Dr. Tucson, Arizona 85748

Dear Ms. Andrews:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California



> 5090 YRMD/KJ June 16, 2021

Mr. Timothy Nuvangyaoma Chairman Hopi Tribe P.O. Box 123 Kykotsmovi, Arizona 86039

Dear Chairman Nuvangyaoma:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR fille

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Mr. Stewart Koyiyumptewa, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Val R. Panteah Governor Pueblo of Zuni P.O. Box 339 Zuni, New Mexico 87327

Dear Governor Panteah:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR fille

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Mr. Kurt Dongoske, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Martin Harvier President Salt River Pima-Maricopa Indian Community 10005 East Osborn Road Scottsdale, Arizona 85256

Dear President Harvier:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WRAller

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Ms. Angela Garcia-Lewis, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Peter Steere Mr. Jefford Francisco Tohono O'Odham Nation P.O. Box 837 Sells, Arizona 85634

Dear Mssrs. Steere and Francisco:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field Number	Site Description	Location	NRHP Determination
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

urfills

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California



> 5090 YRMD/KJ June 16, 2021

Mr. Thomas Tortez Chairman Torres-Martinez Desert Cahuilla Indians P.O. Box 1160 Thermal, California 92274

Dear Chairman Tortez:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number	_		
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

NR filler

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Mr. Michael Mirelez, with enclosure(s)



> 5090 YRMD/KJ June 16, 2021

Mr. Chris Coder Tribal Archaeologist Yavapai-Apache Nation 2400 W. Datsi St. Camp Verde, Arizona 86322

Dear Mr. Coder:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WRAMIS

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California



> 5090 YRMD/KJ June 16, 2021

Mr. Robert Ogo President Yavapai-Prescott Indian Tribe 530 East Merritt Street Prescott, Arizona 86301

Dear President Ogo:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing government-to-government consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would consist of nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW and three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR.

MCAS Yuma contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effects (APE) associated with the LZs, DZs, ALZ, and AFA. The survey resulted in the recording of 4 new sites and 77 isolated occurrences (IOs). Cardno relocated 3 previously recorded sites, 1 for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius within the BMGRW and the CMAGR boundaries. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Field	Site Description	Location	NRHP Determination
Number			
Cardno 1	Historical Trash Scatter	BMGRW	Not Eligible
Cardno 2	Historical Can and Trash Scatter	BMGRW	Not Eligible
Cardno 3	Historical Mining Exploration	BMGRW	Not Eligible
Cardno 4	Historical Habitation	BMGRW	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments concerning properties of traditional, religious, and cultural significance in the vicinity of the proposed project or questions regarding consultation on this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR deller

WILLIAM R. SELLARS By direction of the Commanding Officer

Enclosure: Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California

Copy to: Ms. Linda Ogo, with enclosure(s)



5090 YRMD/KJ July 27, 2021

Ms. Erin Davis Archaeological Compliance Specialist State Historic Preservation Office 1100 W. Washington St. Phoenix, Arizona 85007

Dear Ms. Davis:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing consultation for a proposed MV-22 facilities project on the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California. The proposed project would include nine new Landing Zones (LZs) and two new Drop Zones (DZs) on the BMGRW. Although the enclosed survey report also details the results of the CMAGR portion of the survey in California, we are including and consulting on only those portions on the BMGRW in Arizona.

Naval Facilities Engineering Systems Command, on behalf of MCAS Yuma, contracted Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effect (APE) associated with the LZs and DZs. The survey resulted in the recording of three new sites and 65 isolated occurrences (IOs). Cardno relocated one previously recorded site, for which they updated the site form. Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius. The search revealed that previous archaeological surveys resulted in no historic properties recorded within the APE. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

Site Number Site Description		NRHP
		Determination
AZ X:8:142(ASM)	Historical Mining Site	Not Eligible
AZ X:8:178 (ASM)	Historical Trash Scatter	Not Eligible
AZ X:8:179 (ASM)	Historical Can and Trash Scatter	Not Eligible
AZ X:8:180 (ASM)	Historical Mining Exploration and Habitation	Not Eligible

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. A similar letter was emailed on June 17, 2021, to the tribes with whom we typically consult and a matrix of our tribal consultation efforts is enclosed for your records. In addition, MCAS Yuma has prepared a draft Environmental Assessment that will be available for

addition, MCAS Yuma has prepared a draft Environmental Assessment that will be available for public review and comment in August, and we will notify your office of any substantive comments that we receive. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments or questions concerning consultation of this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WR filler

WILLIAM R. SELLARS By direction of the Commanding Officer

- Enclosures: 1. Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California
  - 2. Consultation Matrix



5090 YRMD/KJ July 27, 2021

Ms. Julianne Polanco SHPO Historic Preservation Office 1725 23<sup>rd</sup> St., Ste. 100 Sacramento, California 95816

Dear Ms. Polanco:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800, Marine Corps Air Station (MCAS) Yuma is initializing consultation for a proposed MV-22 facilities project on the Chocolate Mountain Aerial Gunnery Range (CMAGR) in southeastern California and the Barry M. Goldwater Range West (BMGRW) in southwestern Arizona. The proposed project would include three LZs, one Assault Landing Zone (ALZ), and one Artillery Firing Area (AFA) on the CMAGR. Although the enclosed survey report also details the results of the BMGRW portions of the survey in Arizona, we are including and consulting on only those portions on the CMAGR in California.

Naval Facilities Engineering Systems Command, on behalf of MCAS Yuma, Cardno GS, Inc. (Cardno) to conduct an intensive archaeological survey within the Area of Potential Effect (APE) associated with the LZs, the ALZ, and the AFA. The survey resulted in the recording of no new sites and 12 isolated occurrences (IOs). Prior to the survey, a literature review and records search was conducted for the APE and surrounding one-mile radius. The search revealed that previous archaeological surveys resulted in two historical-period sites recorded within the APE (P-13-017027 and CA-IMP-10184). P-13-017027 is a road that has been previously determined not eligible and CA-IMP-10184 is a military site that will not be impacted by the proposed project. None of the newly recorded sites and none of the IOs are eligible for listing in the National Register of Historic Places (NRHP).

MCAS Yuma has made a finding of No Historic Properties Affected for the proposed MV-22 facilities project. A similar letter was emailed on June 17, 2021, to the tribes with whom we typically consult and a matrix of our tribal consultation efforts is enclosed for your records. In addition, MCAS Yuma has prepared a draft Environmental Assessment that will be available for public review and comment in August, and we will notify your office of any substantive comments that we receive. We appreciate your input and thank you for your interest in our cultural resources program. If you have any comments or questions concerning consultation of this project, please contact Karla James, MCAS Yuma Archaeologist, at (928) 269-2288 or karla.james@usmc.mil.

Sincerely,

WILLIAM R. SELLARS By direction of the Commanding Officer

- Enclosures: 1. Archaeological Survey of 2,004 Acres for the Proposed Cactus West MV-22 Landing Zones, Drop Zones, Assault Landing Zone, and Artillery Firing Area on the Barry M. Goldwater Range-West, Yuma County, Arizona and on the Chocolate Mountain Aerial Gunnery Range, Imperial County, California
  - 2. Consultation Matrix
This page intentionally left blank.

#### UNITED STATES MARINE CORPS RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY AND AIR QUALITY EMISSIONS ESTIMATES

#### Introduction

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

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

Federal actions are exempt from conformity determinations if their emissions do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 93.153c). The general conformity rule also exempts certain federal actions from the requirements of the rule, as these actions are assumed to conform to a SIP. Conformity *de minimis* levels (in tons/year) for Imperial and Yuma counties, the regions potentially affected by the Proposed Action, are listed in Table 1.

		una countes	
Criteria Pollutant	De Minimis Level (tons/year)	Imperial County	Yuma County
Volatile Organic Compounds (VOC)	100	Nonattainment (marginal)	Nonattainment (marginal)
Oxides of Nitrogen (NO <sub>x</sub> )	100	Nonattainment (marginal)	Nonattainment (marginal)
Particulate Matter 2.5 (PM <sub>2.5</sub> )	100	Nonattainment (moderate)	N/A
Particulate Matter 10 (PM <sub>10</sub> )	100	Maintenance (serious)	Nonattainment (moderate)

 
 Table 1
 Conformity De Minimis Levels for Criteria Pollutants for Imperial and Yuma Counties

#### **Proposed Action**

<u>Activity</u>: Establish and use landing zones (LZs), assault landing zones (ALZs), drop zones (DZs), and an artillery firing area (AFA) at the two tactical ranges within the Bob Stump Training Range Complex: the Chocolate Mountain Aerial Gunnery Range (CMAGR) and the Barry M. Goldwater Range (BMGR)-West.

Location: Imperial County, California (CAGR) and Yuma County, Arizona (BMGR-West).

<u>Proposed Action Name</u>: Environmental Assessment for Establishment and Use of Training Support Areas in the Bob Stump Training Range Complex.

<u>Proposed Action Summary</u>: The U.S. Marine Corps proposes to establish and use LZs, ALZs, DZs, and an AFA at the two tactical ranges within the Bob Stump Training Range Complex (BSTRC): the CMAGR, California and the BMGR-West, Arizona. The USMC does not propose to increase the quantity of sorties flown, increase the amount and/or types of ordnance expended, increase artillery training tempo, or alter the existing facilities or airspace within the BSTRC under the Proposed Action. The primary activities that

would generate air emissions would be establishing and maintaining the access road and combat trail to AFA Burt 2.0 and the expeditionary landing strip at Unimproved ALZ Bull. These activities would occur in the Imperial County portion of the CMAGR. In addition, as needed maintenance trips would occur for the LZs established at the BMGR-West, located in Yuma County.

<u>Air Emissions Summary</u>: Based on the air quality analysis, the emissions for establishment and use of LZs, ALZs, DZs, and an AFA at the two tactical ranges within the BSTRC, would be well below conformity *de minimis* levels. Attachment (1) of this RONA presents the air emission calculations for the proposed action.

Date RONA Prepared: 07 May 2021

RONA Prepared By: MCAS Yuma with direct support from Cardno

#### **Proposed Action Exemptions**

The Proposed Action is exempt because the calculated total emissions would be below *de minimis* levels set forth in the Clean Air Act General Conformity Regulation.

#### Attainment Status and Emissions Evaluation and Conclusion

The General Conformity Rule requires conformity evaluations for proposed emissions that would occur within areas that are in nonattainment or maintenance of a national ambient air quality standards. The Proposed Action, which includes grading activities within Imperial County and as needed maintenance activities occurring in both Imperial and Yuma counties. Therefore, the focus of this conformity applicability analysis is to compare project emissions to *de minimis* levels applicable to Imperial County and Yuma County.

Imperial County presently is classified as in nonattainment (marginal) for the 8-hour federal ozone ( $O_3$ ) standard. Ozone is a secondary pollutant formed when  $O_3$  precursors, nitrogen oxides ( $NO_x$ ) and volatile organic compounds (VOCs) combine in the atmosphere in the presence of sunlight. Therefore, the United States Environmental Protection Agency general conformity regulations set *de minimis* levels for  $O_3$  precursors instead of  $O_3$ . Imperial County also is in maintenance (serious) of  $PM_{10}$  and is in nonattainment (moderate) of  $PM_{2.5}$ . Yuma County presently is classified as in nonattainment (marginal) for the 8-hour federal ozone ( $O_3$ ) standard and is in nonattainment (moderate) of  $PM_{10}$ . Based upon these designations, the applicable annual conformity *de minimis* thresholds for these areas are 100 tons of VOCs,  $NO_x$ ,  $PM_{10}$ , and  $PM_{2.5}$ .

Table 2 summarizes the conformity-related emissions that would occur from grading and maintenance activities of the Proposed Action at the CMAGR. The main sources of conformity-related emissions associated with the project grading would include combustive emissions due to the use of fossil fuel-powered equipment and particulate matter emission from grading activities. Operational emissions generated at BMGR-West from nonscheduled, as needed vegetation maintenance for LZs, would be less than those identified for the operational emissions for the CMAGR in Table 2. The data show that conformity-related emissions for the Proposed Action would be well below the applicable *de minimis* levels. Therefore, emissions from the proposed action would show conformity under the Clean Air Act, as amended.

A ativity	Air Pollutant Emissions (tons/year)								
Acuvuy	VOCs	NOx	PM10	PM2.5					
Grading Emissions – 2022	0.15	1.56	0.34	0.20					
Operational Emissions – 2023	0.0014	0.0118	0.0004	0.0004					
Conformity <i>de minimis</i> Levels (tons/year)	100	100	100	100					
Exceeds Conformity <i>de minimis</i> Levels?	No	No	No	No					

 Table 2
 Annual Conformity-Related Emissions from the Proposed Action at the CMAGR

#### **RONA** Approval

I concur in the finding that air emissions associated with the proposed action would be below *de minimis* levels and therefore do not require further conformity evaluation.

Signature

Date

CHARLES E. DUDIK Colonel, U.S. Marine Corps Commanding Officer Marine Corps Installations West-Marine Corps Air Station Yuma Page 1 of 17

Cactus West EA - Salton Sea Air Basin, Annual

## **Cactus West EA**

Salton Sea Air Basin, Annual

#### **1.0 Project Characteristics**

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.00		57.70	0.00	0

#### **1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	3.4	Precipitation Freq (Days)	20
Climate Zone	15			Operational Year	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (Ib/MWhr)	1270.9	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (Ib/MWhr)	0.006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - No timeframe for the Proposed Action was identified in the DOPAA, so it was assumed the construction phase would begin in 2022.

Land Use - The areas that need grading and earthwork were combined into one total area. Unimproved ALZ Bull = 12.9ac, AFA access road = 33.4ac, and the new combat road = 11.4ac.

Construction Phase - Per the Cactus West EA DOPAA, it would take 80 days for the Unimproved ALZ Bull to be established. Since the DOPAA did not specify the time in which the access road and new combat trail would be completed, it was assumed that each would also be established within this timeframe.

Grading - Grading for construction is 57.7 acres, which is the total acraege identified in the DOPAA for the ALZ Bull, AFA access road and combat trail.

Operational Off-Road Equipment - The ALZ Bull landing strip, AFA access road and combat trail would require biannual grading maintenance, per the DOPAA. Additionally, vegetation maintenance (done with hand tools) and any application of soil stabilizer would be done when deemded necessary for training exercises and not scheduled regularly. So the Off-Highway truck was added to the model to go out for these such area maintenance activities a total of 4 days a year.

Off-road Equipment - Since there was no information provided as to the specifics of the equipment needed for the establishement of the ALZ Bull, AFA access road and the combat trail, it was assumed that the default CalEEmod grading construction equipment would be used.

Energy Use -

#### Page 2 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	110.00	80.00
tblConstructionPhase	PhaseEndDate	6/3/2022	4/22/2022
tblGrading	AcresOfGrading	200.00	57.70
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	2.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	4.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00

# 2.0 Emissions Summary

Page 3 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 2.1 Overall Construction

#### **Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton	s/yr							МТ	/yr		
2022	0.1485	1.5562	1.1871	2.5400e- 003	6.3958	0.0654	6.4612	0.7475	0.0602	0.8077	0.0000	223.3973	223.3973	0.0708	0.0000	225.1661
Maximum	0.1485	1.5562	1.1871	2.5400e- 003	6.3958	0.0654	6.4612	0.7475	0.0602	0.8077	0.0000	223.3973	223.3973	0.0708	0.0000	225.1661

#### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton	s/yr							МТ	/yr		
2022	0.1485	1.5562	1.1871	2.5400e- 003	0.2752	0.0654	0.3407	0.1368	0.0602	0.1970	0.0000	223.3970	223.3970	0.0708	0.0000	225.1658
Maximum	0.1485	1.5562	1.1871	2.5400e- 003	0.2752	0.0654	0.3407	0.1368	0.0602	0.1970	0.0000	223.3970	223.3970	0.0708	0.0000	225.1658

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	95.70	0.00	94.73	81.70	0.00	75.62	0.00	0.00	0.00	0.00	0.00	0.00

#### Cactus West EA - Salton Sea Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2022	3-31-2022	1.3699	1.3699
2	4-1-2022	6-30-2022	0.3350	0.3350
		Highest	1.3699	1.3699

# 2.2 Overall Operational

#### Unmitigated Operational

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	ī/yr		
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Offroad	1.3900e- 003	0.0118	8.2700e- 003	3.0000e- 005		4.1000e- 004	4.1000e- 004		3.8000e- 004	3.8000e- 004	0.0000	2.9036	2.9036	9.4000e- 004	0.0000	2.9270
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.3900e- 003	0.0118	8.2700e- 003	3.0000e- 005		4.1000e- 004	4.1000e- 004		3.8000e- 004	3.8000e- 004	0.0000	2.9036	2.9036	9.4000e- 004	0.0000	2.9270

#### Page 5 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 2.2 Overall Operational

## Mitigated Operational

	ROG	NOx	CC	C	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitiv PM2.	ve Exha 5 PM2	iust 2.5	PM2.5 Total	Bio- CO	02 NBio	- CO2	Total CO2	CH4	I	N2O	CO2e
Category						tc	ons/yr									МТ	/yr			
Area	0.0000	0.000	0 0.00	000	0.0000		0.0000	0.0000		0.00	000	0.0000	0.000	) 0.0	0000	0.0000	0.000	0 0	.0000	0.0000
Energy	0.0000	0.000	0 0.00	000	0.0000		0.0000	0.0000		0.00	000	0.0000	0.000	) 0.0	000	0.0000	0.000	0 0	.0000	0.0000
Offroad	1.3900e- 003	0.011	8 8.270 00	)0e- 3	3.0000e- 005		4.1000e- 004	4.1000e- 004		3.800 00	00e- 4	3.8000e- 004	0.000	) 2.9	036	2.9036	9.4000 004	e- 0	.0000	2.9270
Waste	,						0.0000	0.0000		0.00	000	0.0000	0.000	) 0.0	000	0.0000	0.000	0 0	.0000	0.0000
Total	1.3900e- 003	0.011	8 8.270 00	00e- 3	3.0000e- 005		4.1000e- 004	4.1000e- 004		3.800 00	00e- 4	3.8000e- 004	0.000	) 2.9	036	2.9036	9.4000 004	e- 0	.0000	2.9270
	ROG		NOx	cc	D SO	O2 Fu F	Igitive Ex PM10 F	haust P PM10 T	M10 otal	Fugitive PM2.5	Exha PM2	ust PM2 2.5 Tot	2.5 B al	o- CO2	NBio-C	O2 Total	CO2	CH4	N2	0 CO2
Percent	0.00		0.00	0.0	0 0.	00	0.00	0.00 0	0.00	0.00	0.0	0.0 0.0	0	0.00	0.00	0.0	0	0.00	0.0	0 0.00

# **3.0 Construction Detail**

#### **Construction Phase**

Reduction

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2022	4/22/2022	5	80	Grading and major earthwork to establish the ALZ Bull, AFA access road, and combat trail.

Acres of Grading (Site Preparation Phase): 0

Page 6 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### Acres of Grading (Grading Phase): 57.7

Acres of Paving: 57.7

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Scrapers	2	8.00	367	0.48

#### Trips and VMT

Phase Name	Offroad Equipment	Worker Trip	Vendor Trip	Hauling Trip	Worker Trip	Vendor Trip	Hauling Trip	Worker Vehicle	Vendor	Hauling
	Count	Number	Number	Number	Length	Length	Length	Class	Vehicle Class	Vehicle Class
Grading	8	20.00	0.00	0.00	11.00	5.40	20.00	LD_Mix	HDT_Mix	HHDT

#### **3.1 Mitigation Measures Construction**

Page 7 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 3.2 Grading - 2022

# Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Fugitive Dust					0.2715	0.0000	0.2715	0.1357	0.0000	0.1357	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1450	1.5537	1.1617	2.4800e- 003		0.0654	0.0654		0.0602	0.0602	0.0000	218.1384	218.1384	0.0706	0.0000	219.9022
Total	0.1450	1.5537	1.1617	2.4800e- 003	0.2715	0.0654	0.3369	0.1357	0.0602	0.1959	0.0000	218.1384	218.1384	0.0706	0.0000	219.9022

#### Unmitigated Construction Off-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e- 003	2.4900e- 003	0.0255	6.0000e- 005	6.1243	4.0000e- 005	6.1244	0.6118	4.0000e- 005	0.6118	0.0000	5.2589	5.2589	2.0000e- 004	0.0000	5.2639
Total	3.5300e- 003	2.4900e- 003	0.0255	6.0000e- 005	6.1243	4.0000e- 005	6.1244	0.6118	4.0000e- 005	0.6118	0.0000	5.2589	5.2589	2.0000e- 004	0.0000	5.2639

Page 8 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 3.2 Grading - 2022

#### Mitigated Construction On-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Fugitive Dust					0.2715	0.0000	0.2715	0.1357	0.0000	0.1357	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1450	1.5537	1.1617	2.4800e- 003		0.0654	0.0654		0.0602	0.0602	0.0000	218.1381	218.1381	0.0706	0.0000	219.9019
Total	0.1450	1.5537	1.1617	2.4800e- 003	0.2715	0.0654	0.3369	0.1357	0.0602	0.1959	0.0000	218.1381	218.1381	0.0706	0.0000	219.9019

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e- 003	2.4900e- 003	0.0255	6.0000e- 005	3.7400e- 003	4.0000e- 005	3.7800e- 003	1.0500e- 003	4.0000e- 005	1.0900e- 003	0.0000	5.2589	5.2589	2.0000e- 004	0.0000	5.2639
Total	3.5300e- 003	2.4900e- 003	0.0255	6.0000e- 005	3.7400e- 003	4.0000e- 005	3.7800e- 003	1.0500e- 003	4.0000e- 005	1.0900e- 003	0.0000	5.2589	5.2589	2.0000e- 004	0.0000	5.2639

# 4.0 Operational Detail - Mobile

Page 9 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 4.1 Mitigation Measures Mobile

#### 4.2 Trip Summary Information

	Ave	rage Daily Trip Ra	ate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

# 4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

#### 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.492822	0.035624	0.185121	0.119005	0.014436	0.005121	0.022629	0.112565	0.003037	0.001863	0.006214	0.000779	0.000783

# 5.0 Energy Detail

Historical Energy Use: N

#### 5.1 Mitigation Measures Energy

#### Cactus West EA - Salton Sea Air Basin, Annual

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated	n			, , , ,		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

# 5.2 Energy by Land Use - NaturalGas

<u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	/yr		
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Page 11 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

# 5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	/yr		
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### 5.3 Energy by Land Use - Electricity

<u>Unmitigated</u>

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		МТ	/yr	
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

CalEEMod Version: CalEEMod.2016.3.2

Page 12 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

# 5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		MT	/yr	
Other Non- Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

# 6.0 Area Detail

# 6.1 Mitigation Measures Area

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT	/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Page 13 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 6.2 Area by SubCategory

#### <u>Unmitigated</u>

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory		tons/yr											МТ	/yr		
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory		tons/yr											МТ	/yr		
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

#### Cactus West EA - Salton Sea Air Basin, Annual

# 7.1 Mitigation Measures Water

# 8.0 Waste Detail

#### 8.1 Mitigation Measures Waste

#### Category/Year

	Total CO2	CH4	N2O	CO2e					
	MT/yr								
Mitigated	0.0000	0.0000	0.0000	0.0000					
Unmitigated	0.0000	0.0000	0.0000	0.0000					

Page 15 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

#### 8.2 Waste by Land Use

<u>Unmitigated</u>

	Waste Disposed	Total CO2	CH4	N2O	CO2e			
Land Use	tons	MT/yr						
	0	0.0000	0.0000	0.0000	0.0000			
Total		0.0000	0.0000	0.0000	0.0000			

#### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e			
Land Use	tons	MT/yr						
	0	0.0000	0.0000	0.0000	0.0000			
Total		0.0000	0.0000	0.0000	0.0000			

# 9.0 Operational Offroad

#### CalEEMod Version: CalEEMod.2016.3.2

Page 16 of 17

#### Cactus West EA - Salton Sea Air Basin, Annual

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Graders	1	8.00	2	187	0.41	Diesel
Off-Highway Trucks	1	8.00	4	402	0.38	Diesel

#### UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type					ton	s/yr							MT	/yr		
Graders	3.8000e- 004	4.6500e- 003	1.6900e- 003	1.0000e- 005		1.5000e- 004	1.5000e- 004		1.4000e- 004	1.4000e- 004	0.0000	0.5814	0.5814	1.9000e- 004	0.0000	0.5861
Off-Highway Trucks	1.0100e- 003	7.1400e- 003	6.5800e- 003	3.0000e- 005		2.6000e- 004	2.6000e- 004		2.4000e- 004	2.4000e- 004	0.0000	2.3222	2.3222	7.5000e- 004	0.0000	2.3410
Total	1.3900e- 003	0.0118	8.2700e- 003	4.0000e- 005		4.1000e- 004	4.1000e- 004		3.8000e- 004	3.8000e- 004	0.0000	2.9036	2.9036	9.4000e- 004	0.0000	2.9270

# **10.0 Stationary Equipment**

#### Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

#### **Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

#### **User Defined Equipment**

Equipment Type Number

# 11.0 Vegetation

Page 17 of 17

Cactus West EA - Salton Sea Air Basin, Annual